DEVELOPMENT AND DIVINE PURPOSE

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PREFACE

THE present volume contains the first set of lectures given before the University of Cambridge, under the terms of the lectureship established in 1904 through the generosity of Dr. Stanton, Ely Professor of Divinity. It may be well to reprint in full from *The Cambridge University Reporter* of 23rd February, 1904, the letter in which Dr. Stanton communicated his offer to the Vice-Chancellor of the University :—

"The Senate last June accepted the proposal of the Special Board for Divinity to add to Part II. of the Theological Tripos a new Section on the *Philosophy of Religion and Christian Ethics*, the first examination in which is to be held in June 1906. We may hope that some students will begin to prepare for this examination after the present Academic Year, and the question of providing for any who may do so,

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the advice and teaching which they will require, must soon be taken into consideration. I think that some of the existing staff of Divinity teachers in the University may be able and glad to give assistance in certain of the subjects included in the Schedule. But it is also very desirable that courses of lectures should be given from time to time by some one who is an expert in philosophy, in a way that those who have been much occupied with Theology, Biblical Criticism, and Church History can rarely succeed in being, and who has also given special attention to the subject of its relation to religious belief. . . . I believe that such lectures would prove attractive to others besides students for the new section of the Theological Tripos."

This offer the Senate gratefully accepted, and the lectureship was officially entitled a "Lectureship in the Philosophy of Religion". Under the terms of the benefaction the lecturer is required to deliver a *minimum* of twelve lectures in each academic year. The lectures here printed were given in the Michaelmas term of 1904 and the Lent term of 1905 and

were open to the general public. They were thirteen in number, and are reproduced substantially as they were spoken.

I cannot claim the merit of any special originality for the contents of this volume, though I have tried to assimilate and make my own what I have learned from other writers. Yet I venture to hope that the book may serve a useful purpose, in that it brings together a number of ideas connected with the Argument from Design and the conception of Development which possess a true organic unity, and represent a mental outlook shared by many at the present time. Where I have directly borrowed a thought or suggestion from another I have endeavoured to acknowledge my debt in the footnotes. But I should like to say here that the books which have most helped to shape my own thinking upon the subjects on which I have written are, Professor Campbell Fraser's Gifford Lectures, *The Philosophy of Theism;* Professor Ward's Gifford Lectures, *Naturalism and Agnosticism;* and Dr. Martineau's *Study of Religion.* A life-long debt also I owe to my uncle, Mr. Reginald Fanshawe, formerly

Fellow of New College, and I am glad to take this opportunity of expressing my gratitude for all that he has done for me in the way of moulding and stimulating my mental development. Though, with the exception of a suggestion or two for the introductory lecture, the present course was written without advice from him or from any one, yet I feel that the interchange of ideas which we have had together during the past few years, as occasion has offered itself, has helped not a little to determine my present outlook, both theological and philosophical. This is not a kind of debt which can be repaid. The only form of repayment possible is to follow the leading so generously given, and, while striving to grow oneself into a clearer vision and larger understanding of the truth, to share with others thoughts which have proved themselves so pregnant with life for one's own mind.

V. F. S.

Bramshott, 1906

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DEVELOPMENT AND DIVINE PURPOSE

CHAPTER I

INTRODUCTORY

THE speculative activity of the present time is characterised, one may affirm with certainty, by one prominent feature—its general recognition of the unity of knowledge, and of the close correlation and interdependence which exist between the various departments of inquiry. Special branches of study still retain their speciality, but it grows more and more difficult to draw hard and fast lines of demarcation round the subject-matter of each. What we may designate as borderland problems hold an increasingly important place, whether in natural science, ethics, or psychology. Truth is seen to be organic and concrete, and, for its apprehension, men recognise that an organic atti-

tude of mind is necessary. Such an attitude of mind was that of the late Dr. Hort, whose Hulsean lectures, *The Way, the Truth, the Life*—lectures given, let us remember, at the very same period when the theologian was also examining in the Natural Sciences Tripos—will, assuredly, for many a long year to come, continue to deliver their profound and striking message. No one understood more clearly than Dr. Hort that truth enters the mind of man by many avenues, and that the ripest thought and the clearest illumination come only to those who seek to see truth in its many-sidedness, and to grow into its fulness.

It was some such recognition as this of the organic nature of truth which doubtless prompted Professor Stanton to make his most generous offer, from which has resulted the foundation of the present lectureship. And that the University of Cambridge should have selected a member of the sister University of Oxford to be her first lecturer in the Philosophy of Religion is, surely, proof that, corresponding to the recognition of the interdependence of all branches of knowledge, is the practical feeling that all seekers for truth belong to one brotherhood, and that the search is best promoted by

throwing open to competition teachers' posts, which, in earlier years, might have been regarded as closed to any others than members of the society in which the vacancy occurred. The justification for attributing to the founder of this lectureship a certain intention is to be found in the notice in *The University Reporter* of 23rd February, 1904, which embodies Professor Stanton's letter, offering to endow this post. The reason given in that letter for the foundation of the lectureship is, that a new section, dealing with the Philosophy of Religion and Christian Ethics, has just been added to the Theological Tripos. Further, one of the regulations attached to the tenure of this office is, that the lecturer shall submit in advance a statement of the proposed subject of his lectures, both to the special Board for Divinity, and to the special Board for Moral Science. May not this be taken as conclusive evidence that in Cambridge the view obtains that the problems of ethics, theology, philosophy are all vitally interconnected, and that, in some sense, the Philosophy of Religion may be regarded as mediating between these three? This, at any rate, is how the present lecturer interprets for himself the terms of his commission, that he is

required to lecture on those subjects which lie on the confines of science, philosophy, theology, those borderland problems of which mention has just been made.

To define with any exactness the scope of a Philosophy of Religion is not easy, nor will any attempt at such definition be made here. But I may, perhaps, be allowed to offer a few introductory remarks upon the point, before proceeding to characterise more precisely the subject-matter of this volume. The supreme function of the Philosophy of Religion is, from one point of view, the same as that of all philosophy, to discover the ultimate unity or ground of all being and knowledge. But she is, perhaps, more particularly concerned with the investigation of the three following problems. Can personality be predicated of that ultimate unity? What is the relation in which this unity stands to man? What importance and significance are to be attached to the verdicts of the common religious consciousness? For purposes of analysis and exposition we speak of these as three problems, but they are really one. They all merge in the great inquiry, whether God is a Personal Being. That, after all, is the supreme question to which we seek an answer. As

ethical beings, we wish to discover whether the moral laws, which ethics conceives as abstract and impersonal, can be interpreted as the expression of a Divine will and character; whether the strange, spiritual significance of the beauty of the natural world of form and colour—the "fancy from a flower-bell," the "sunset touch"—is only illusion, born of irrational association, or whether it is a real witness to a personal existence, greater than ourselves; whether our deepest hopes and aspirations, the out-reaching of our spirits after a Father of all spirits, in prayer, and resolve, and consecration of self, are vain and fruitless, or whether there is a God who hears, and answers, and regards. Just because religion is the movement of man's whole personality towards that final unity which we call God, and which faith interprets as a person, the conception of personality remains the central conception in a Philosophy of Religion. The religious life of man demands that he shall be able to enter into conscious relationship with a personal God. The history of religious development has been, on the whole, that of a progress towards God, interpreted as a personal Being, while the noblest form of known religion distinctly characterises God as possessed of a per-

sonality which has true and abiding points of affinity with our own. The religious consciousness seems to grasp God by methods more direct than those which are available for philosophic reason. Religion lays hold by immediate intuition, as it were, of the supreme object of her faith. Prayer affords an open avenue of approach; the feelings of awe and reverence place her at once in the heart of the Divine presence. It is for the Philosophy of Religion to justify, if she can, these direct verdicts of the common consciousness. As life precedes philosophy, so religion precedes that further reflection upon herself which we call the Philosophy of Religion. If this justification can be achieved, if God can be made real to reason and reflection, there will result, surely, for the individual, what we may call a larger intuition, or immediate apprehension of God, as certain, as direct, as the other, but more strong to withstand the disintegrating effects of criticism. The temper of the steel will have been tested, the dross will have been burnt away from the true metal. What we are urging is this, that, just as the simple, religious consciousness never lays hold of God by a movement of reason or reflection alone, so, after reflection has been brought to bear upon the contents of the religious con-

sciousness, reason will find herself transfigured into something larger than what we usually mean by the word. She will be an organic reason, a reason expressive of the whole rich content of human nature.

To arrive, however, at this mature and reasoned conviction of the existence and personality of God, is to have achieved the supreme synthesis of thought. It is to put the coping-stone upon the building. The goal is only to be won, if it is to be won at all, after many efforts and much labour have been devoted to the solution of subordinate problems. And the Philosophy of Religion is called on to investigate these subordinate problems. Her inquiry here becomes one with that of general philosophy, which receives at the hands of the special sciences the conclusions which they have reached, and revises and correlates them in the light of her conviction, that there is a final unity somewhere to be found. Like philosophy, the Philosophy of Religion will show a spirit of receptiveness, patience, humility; but, in all her inquiries, she will be constantly reminding herself that it is religion in which she is primarily interested, and that religion is something very old and universal among men. The remem-

brance of this fact, while it need not create a bias or prejudice in her mind, will certainly affect the spirit and temper of her inquiry. There is no such thing as complete impartiality of mind. All speculation rests on a basis of some presuppositions. Every investigator brings with him, to his work of search, his own complex personality. An absolutely impartial mind would be an empty mind.

One other introductory topic, upon which a few words must be said, is the relation of theology to the Philosophy of Religion.

The situation here may be summed up by saying that, in matters theological, the movement of reason must be free and unfettered. We can no longer adopt the mediæval *dictum*, that philosophy is the handmaid of theology. Theology, if she would lay claim to the title of scientific, must herself adopt the method of reason, which is the method of free inquiry.[1] The principle of authority cannot be, for a reasoning being, an ultimate principle. In so far as the dogmatic utterances of any theological system represent the summed up reflection of the thoughtful minds of the past, the Philosophy

[1] See Ladd's *Introduction to Philosophy*, chap. xiii., pp. 352-4.

of Religion will treat them with the utmost reverence; but she will hold herself free to criticise them, and, if need be, to restate them. If they were born of critical reflection, reflection may still ask them for their credentials. The Philosophy of Religion is not worthy of the name of philosophy unless she preserves her right of free inquiry at the bar of reason. Even a religion which claims to be a revealed religion must appear before this tribunal; for she has to prove that the mysteries, which she holds in her hands, are God-given, and she can make good her position only by the appeal to reason.

It is, I think, worth while to insist upon this point, for there is still to-day much use made, in what can only be called an irrational manner, of this principle of authority in religion; while a very interesting psychological study is presented by some theologians who seem to have effected, in their own minds at any rate, an adjustment or compromise between the principle of reason and the principle of authority. A careful analysis, for example, of what one may call the logic of such a volume of essays as *Lux Mundi*, would, not improbably, reveal grave incompatibilities of thought and method.

This, however, is by the way. What I would

venture to urge is, that, in an age which has been touched by the spirit of criticism, and, above all, by the spirit of historical inquiry, any appeal to the principle of authority, as such, and as an independent principle, cannot possibly be justified. There is a wealth of meaning in a saying of the late August Sabatier, which occurs in the preface to his volume (posthumously published, and recently translated into English), *The Religions of Authority and the Religion of the Spirit*.[1] He writes, "The history of a dogma is its inevitable criticism". Every dogma, that is, received shape under definite, historical conditions, and the formulation of the truth was affected under pressure from those conditions. The organism took some colour from its environment. To understand the dogma, therefore, you must study it in the light of the historical circumstances under which it arose. From the origin of the dogma you pass on, naturally, to study its subsequent history. You begin to criticise it, from the point of view of its suitableness to the needs, both intellectual and practical, of a later time. You ask, whether the dogma is the expression of a truth, which is a truth for

[1] Theological Translation Library, Williams & Norgate.

us, here and now, or whether lapse of time has revealed it as belonging to the things which pass away. Or, if the truth, which the dogma embodies, proves itself to be possessed of a present vitality, you inquire if there may not still be need for restating that truth in language more suitable to the advancing thought of the age. May we not have to disentangle, in the dogma, the local and temporary elements from those which are essential and eternal? A task, such as this, is a paramount duty for an age which is characterised by the spirit of historical inquiry; but, in undertaking the task, you part company with the principle of authority, as an independent principle. A little farther on, in the introduction to the same volume, Sabatier asks this question: "What is the education of mankind, if not the passage from faith in authority to personal conviction, and to the sustained practice of the intellectual duty to consent to no idea, except by virtue of its recognised truth, to accept no fact until its reality has been, in one way or another, established?"

Passing now to the more immediate subject of this volume, we proceed to indicate its scope and intention, and to say something as to the reasons which make the subject a fruitful field

of inquiry at the present time. The two ideas of Purpose and Development are closely connected in the thought of this generation. The question which we are all asking is, What is the meaning, and what are the essential implications of the idea of development or growth? Will development prove, on analysis, to be a teleological conception, or can we interpret it without any reference to the idea of purpose? The sovereign principle which rules our minds today in every department of inquiry is that of development or evolution; and, if we would understand the mind of the century in which we live, we must make some attempt to interpret the principle. Fully to interpret it will be impossible. To no age is it given to understand completely the ideas which govern it. Just as you cannot appreciate the height of a mountain if you stand at its immediate base, so you cannot see the full significance of an idea, such as that of development, until a considerable period of time has elapsed, during which the idea has had opportunity to reveal itself in its richness and complexity. Even now we do not understand adequately the significance of the principle of nationality, though that principle has been at work in human societies since the dissolution of

the Roman Empire. We are all feeling our way towards a comprehension of this conception of development, which is proving itself to be so profound, and so charged with meaning. And there is all the more reason for this attempt at analysis and interpretation when we remember how recklessly the word "evolution" is used. Many seem to think that the mere utterance of the term brings with it a lucid explanation of all difficulties. Many forget, too, that evolution may mean very different things when applied to different subjects or fields of inquiry. In investigating, then, such a problem as the meaning of development, we are turning the eye of critical reflection inward upon the dominant movement of our own thought. We are seeking to understand ourselves more clearly, so to grasp the essential spirit of our own age that we may the better help to mould the development of the ages which are to follow.

Again, theological questions are to-day exercising a peculiar fascination over a growing number of students. Why is this? Is it not because this conception of development is being applied in the sphere of theology? Theology has at times stood apart from the movements of thought around her, and she has always done so

with loss to herself. But even the most secluded mountain lake sometimes feels the full fury of the gale, and to-day theology stands exposed to all the winds which blow from the four quarters of the heaven. Men are seeing that the law of development operates in theology as elsewhere, and on all sides they are setting themselves to investigate the history and conditions of this evolution. They bring into play their powers of regressive historic sympathy, and endeavour to disengage the germinal principles of Christianity from the accretions, or the natural developments, of later times. They retrace, critically, the whole movement of the river from mouth to source, and back again from source to mouth, and the task is one of the profoundest interest. It cannot, therefore, be amiss, in the face of such speculative activity upon these most vital of all problems, to ask ourselves what the idea of development really means.

If, on the other hand, we think of the idea of purpose, there are not wanting good reasons for an investigation of this conception. First and foremost stands the fact of our own purposive activity as rational beings. Whatever doubt there may be about the applicability of the conception of purpose to the operations of

the natural world, there can be none whatever about its applicability to ourselves. We do habitually act with purpose. We set up before ourselves ends, and contrive means to reach them. And it is inevitable that we should ask whether the principle of final causation is not to have some place in our interpretation of the world around us, whether we may not use our own human nature as a key to unlock the riddle of the universe. The historical importance of the argument from design is sufficient justification for making an attempt once more to examine its validity. By a kind of native instinct man has always seen, and will continue to see, evidences of the work of a designing mind in the natural world. He refuses to acquiesce in a view of the universe which makes him a lonely being in the midst of a world of matter, which shows no trace of spiritual kinship with his own nature. His interest lies in proving, if he can do so, that the purposiveness which he finds in himself is linked on to a larger purposiveness, running through the whole scheme of existence.

As an additional reason for investigating at the present time the conception of purpose, we may mention the recent appearance of a move-

ment in philosophy, known as personal idealism. The supporters of this movement contend that, if we would rise to a true interpretation of reality, we must start from the practical activities of human nature, the will, the striving after the realisation of ends, the whole conative movement of the personality. They maintain that the idealistic philosophy of the past has been too abstract, both in method and results, and that its conclusions stand in need of revision. Such revision they are attempting to carry out, on the basis of a psychology which finds in will and purpose the keynote of human nature. Upon the success of the attempt it is too early, as yet, to pass judgment, for the results of the movement are not sufficiently matured. But of its importance there can be no doubt. Any speculative endeavour to emphasise the element of will, and to interpret ultimate reality in teleological terms, must command attention, because of its appeal to some of the convictions which lie deepest in our spiritual nature.

Once more, whatever view we may ultimately take of the Christian religion, we are face to face with this fact, that the highest known form of religion, the form which seems to be possessed of the vitality necessary to make it a conquering,

missionary creed, is one which conceives of the world as the stage upon which a great, historic purpose is being slowly consummated. Christianity (and we may include under the term the earlier beliefs of the Old Testament, which belong to the same line of spiritual ancestry) was the first religion to possess a philosophy of history. And the dominant conception of that philosophy is this, that through time and in the seeming maze of human history a divine, eternal purpose is being gradually worked out. The Philosophy of Religion has to investigate the demand of Christianity to be regarded as a true explanation of the world-process. In particular, she is confronted with a unique, historic figure who claims, not only to fulfil the past, but to control the future; in whom, as in a focus-point, many convergent lines of evolution seem to meet, and from whom radiate out new forces of development. The Christ of history raises the teleological problem in an acute form.

We have already suggested that one of the most pressing problems for our thought to-day is how we are to interpret development. Is the conception to be construed teleologically? Do the two ideas of purpose and evolution ultimately involve each other? This problem is raised in

a special manner by the conflict between evolutionary science and teleology, over the argument from design. Have modern biological theories of evolution succeeded in destroying the argument, based, as it is, upon the existence of exquisite adaptations in the organic world? Has Darwin given the final quietus to Paley's contention in the *Natural Theology?* This is a question which is full of interest at the present time, and it raises clearly, at a particular point, the important issue as to the compatibility or incompatibility of the two conceptions of purpose and development. It forms one of the problems with which the Philosophy of Religion has to deal. Historically, the argument from design has played a significant part in the determination of the wider problem of the existence and character of God. Since it has fallen somewhat into disrepute to-day, there is all the more need to examine it carefully, in order that we may decide whether the argument is worthless, or whether it only requires to be restated to recover its apologetic value for the theist.

The title of this volume, *Development and Divine Purpose*, covers so wide a field that it is obvious that in the space at our disposal no exhaustive treatment of the subject is possible.

Any attempt in that direction would involve a complete philosophy. The field of inquiry is, therefore, narrowed to the following dimensions. We begin by discussing certain aspects of the argument from design, with especial reference to Darwinism, and modern biological theories of evolution ; and an attempt is made to restate the argument in terms more suitable to the conditions of modern thought and knowledge. The nature of organisms is then investigated, with a view to discovering what are the peculiar characteristics which mark off living from inorganic matter, and how far physical science can claim success in her endeavour to interpret organisms in mechanical terms. The concluding section of the volume deals with the ideas of development and purpose in their larger meaning ; and, in particular, with the problem of what canons are necessary for interpreting a development, and in what ways we may test a development in order to decide whether it has remained true to, or has departed from, its essential principle. Throughout the whole inquiry we keep in mind the necessity of determining whether the idea of development is to be construed teleologically. Such a method of dealing with the subject before us appears more

satisfactory than to attempt, at the outset, a formal definition of growth or development. Definition is one of the last stages arrived at in the process of thought, and definitions are never complete or satisfactory accounts of the subject-matter defined. The richer the object of the definition the more difficult it becomes to define it. Some of its wealth of meaning must be lost in the endeavour to fix it in a precise terminology. Further, part of the process of development now going on in the world consists in a development of our ideas. There is a development of the idea of development; and, until that development is completed, no fully adequate definition of the conception is possible. It is with the idea of development as with the idea of life. Our difficulty is, that we can never arrest the growth of the living organism which we are examining. While we are examining it, it has moved another step in its evolution. Its present we never succeed in analysing, but only its past. Its "is" is eternally becoming a "was". You can arrest its growth only by killing it, and then it is not life, but death, which you are investigating. We are, that is, gradually feeling our way towards a complete analysis of the sovereign idea which at present masters us, but which we hope one day, in our turn, to master.

CHAPTER II

PALEY AND THE ARGUMENT FROM DESIGN

PALEY and Darwin are the two great names round which our discussion of the conception of design will mainly centre; and our problem will be to decide whether, and, if so, to what extent, Darwin has succeeded in destroying Paley's teleological argument. Paley is, by common consent, regarded as the chief exponent of the older teleology. He best states for us the popular view on final causation as it existed before the time of Darwin, and as it still exists in the minds of those who do not realise what a change in outlook was effected by the publication of the *Origin of Species*. It is the fashion to-day to decry Paley. The gulf which separates the modern mind from his mind is enormous, and we shall find reason to conclude that his method of stating the argument from design is, in the light of present knowledge, indefensible. At the same time, there is a vigour and force about

his writings, there is a power of presenting an argument, which is very striking. Nor do his conclusions lack an essential core of soundness. His argument, certainly, needs to be restated, but it is by no means the case that it is worthless.

We may single out three chief features as characteristic of Paley's teleology :—

1. The first is contained in this short quotation from the *Natural Theology :* "Contrivance must have had a contriver, design a designer". The question is, What did Paley mean by "contrivance"? He meant a whole of parts, whose parts were so mutually co-ordinated and adjusted that our minds at once feel that such an intricate arrangement could not have come about by chance. We look at any contrivance—an engine or a telescope among the works of men, an eye or the webbed foot of a duck among the works of Nature—and we are compelled to say that the several parts of these contrivances are "put together for a purpose"; and we pass on, by a natural transition of thought, to infer that in each one of these cases there was an artificer or designer who formed the contrivance for the very purpose which we find that it serves. Arrangement, disposition of parts, subserviency of means to ends, whether in

Nature or among the products of human activity, imply the presence of intelligence.

It may be well briefly to dissect this argument and note its further implications. We discover in it, first of all, Paley's canon of finality, the criterion, that is, by which he decides when it is legitimate to invoke to our aid the principle of final causation, when it becomes necessary for us to speak of an end and of means leading up to that end. Janet, in *Final Causes*, defines an end as "a foreseen effect which could not have taken place without this foresight"; something, in other words, to which many prior movements lead, the predetermined goal of a number of antecedent stages. The emphasis is on the word "predetermined," and for Paley predetermination is the criterion of finality. There would seem, then, to be two cases, where we judge an explanation in terms of final causes necessary: (*a*) where in a given whole we cannot explain the mutual co-ordination and adjustment of the parts without supposing that the whole is, in some sense, present as a controlling factor; where the power, that is, which brought about the adjustment did so having in view the result actually achieved. The result is raised to

the dignity of an end because we regard it as in some fashion foreseen. (β) The second case is that of a development, in which the present appears to be influenced causally by the future, where we cannot satisfactorily explain to ourselves the process of growth without conceiving that the future phenomenon in some way controls the whole development, and is thus, as it were, a cause of itself. Let us take, for example, the instance of the acorn developing into the oak. Here you have an accurate co-ordination of an inconceivable number of molecular movements, each traversing its own peculiar path and yet adjusted all the while to the necessities of the general plan. Such a phenomenon would seem too precise and complicated to be explicable in any other way than by the hypothesis of some purposive control present from the first throughout the whole evolution. Paley, then, insists that a result becomes an end, and must be so judged by us, just because of the complexity of the conditions necessary to bring it about.[1] Nor is any fault to be found with this canon or criterion. What impresses us when we look out either upon the

[1] See Janet, *Final Causes*, bk. i., chaps. i. and ii., and Paley's *Natural Theology*, chaps. i. and ii.

world as a whole or upon any of the marvellous contrivances and adaptations in living Nature is just this co-ordination of parts and movements to produce a complex result. Adaptation is an aspect of the larger phenomenon of order, and it is the orderly character of the universe which calls for an adequate explanation.

The nature of Paley's inference is the next point which attracts our notice. He argues from contrivance to the existence of a designing mind. End implies intention. From the facts of the natural world, from the adaptations of organic Nature, Paley passes to God, and insists that God must have designed these contrivances to fulfil the particular purposes which they do fulfil. He allows, of course, for the action of what are called secondary causes or the operation of natural forces. But he is careful to point out that a cause and a law of Nature are not synonymous terms. Cause, in the last resort, implies power or efficiency, while law does not. A law of Nature is simply the statement of an observed uniformity. You have to pass behind law to explain it. Paley passes behind it, and behind all secondary causes, to God, as the great originator and designer. One hesitates to criticise Paley's conception of God as

anthropomorphic, because any conception which we can form of Him must be that. Yet it is not unfair, I think, to say that Paley does not appear to appreciate the grave metaphysical difficulties which surround his inference.[1] He interprets the Divine activity too much in terms of the activity of a human workman designing a machine. What ground have we for saying that God works in the manner in which we work? How can we determine the relation in which He stands to His material? Does He first create a raw material and then work it up into shape or does He give it form at the same moment in which He calls it into being? Does He stand outside His material or does He in some fashion dwell within it? Can we legitimately speak of foresight or prevision in a Being for whom everything may exist in a timeless present, an eternal now? These questionings come pouring into our minds so soon as we begin to think about the problem of the mode of God's activity. They hardly seem to disturb, they certainly do not agitate, the mind of Paley. Yet we must not be unjust towards him. He was not a metaphysician. He wrote

[1] See, however, *Natural Theology*, chap. iii., end, and chap. v., beginning.

as a typical English theologian of his day, who accepting God's existence, almost as an axiom, interpreted His Being in the language current at the time. We may almost say that he was not interested in the problems which are of supreme importance to a generation which has studied Kant's trenchant criticism of the teleological argument, and which has, under pressure from many quarters, grown to think of God as immanent in all His works. We, to-day, if called on to deal with this problem, should probably endeavour to picture the Divine activity in other terms, more after the fashion described in chapter vii. of this volume, which attempts to restate the argument from design. Yet, when we have raised all our objections, if we are prepared to admit that there is a Divine activity, intention will still be the term by which we shall be compelled to characterise it. For this, at least, is true, that we must apply to God the highest categories which we possess. God's activity cannot be less rational or purposive than our own, and intention is a plain feature of human scheming. God's designing may greatly transcend human designing, but there must exist real points of affinity between our intelligent adaptation of means to ends and the purposive

activity of God. It is not Paley's broad conclusion that there is design and intention with which we quarrel, but his somewhat crude method of stating his argument.

2. The second great characteristic of Paley's teleology is that it is a teleology of special instances. "I take my stand in human anatomy," he writes, and he urges that the eye will prove his point without the ear, and the ear without the eye.[1] Any single contrivance in Nature, sufficiently complex (Paley, however, does not say how much complexity he demands), will satisfy the conditions of the argument; and the *Natural Theology* consists almost entirely of an examination of individual instances of highly complex structures, the eye, the ear, the swimming bladder of fishes, the arrangements in the floral world for effecting fertilisation, and the distribution of seed. We quote, once more, his own words: "So it is with the evidences of a Divine agency. The proof is not a conclusion which lies at the end of a chain of reasoning, of which chain each instance of contrivance is only a link, and of which if one link fails the whole falls; but it is an argument separately supplied

[1] *Natural Theology*, chap. vi.

by every separate example. An error in stating an example affects only that example. The argument is cumulative in the fullest sense of the term."[1]

Our teleology to-day is not one of special instances. Darwin's statement of the theory of natural selection has made it more difficult for us to appeal to single examples of contrivance and adaptation as proof of design, because, however marvellous any contrivance may be, it is always open to the Darwinian to assert that this intricacy of structure has been reached only as the last stage of a long succession of adaptations in the past, each of which has added something towards the perfecting of the contrivance, while the whole progressive development has been carried on by the interaction of laws whose operations show no trace of design. It will be our task to discuss the Darwinian position in the succeeding chapters. It might be unwise to allow that the special instance can never be used as proof of design. But it remains true that we to-day lay emphasis less upon the single adaptation than upon the general and wider movement of evolution as

[1] *Natural Theology*, chap. vi.

a whole. It is in this that we see marks of purpose. We insist upon "the glory of the sum of things". What we are saying may perhaps be stated in a slightly different manner. The particular criticism of Paley's reasoning which, in the light of the theory of natural selection, we should be inclined to offer, is to ask whether we can defend an anticipatory teleology. Paley argues that things were made beforehand, as it were, for certain definite purposes, each organ and structure for the particular purpose which it serves, and that God had in mind these purposes before He made the organ. There is antecedent design. Things were intended for the uses which they serve. But Darwin has suggested an alternative explanation of the facts, which, while it in no way destroys teleology altogether, certainly makes it more difficult to insist upon an anticipatory teleology, conceived as Paley conceives it. Darwin himself was of opinion that the discovery of the principle of natural selection had dealt the death-blow to teleology as an argument based upon special adaptations. We find in the *Autobiography*[1] the following statement: "The old argument

[1] See *Charles Darwin* by his son Francis Darwin, chap. iii.

from design in Nature, as given by Paley, which formerly seemed to me so conclusive, fails, now that the law of natural selection has been discovered. We can no longer argue that, for instance, the beautiful hinge of a bivalve shell must have been made by an intelligent being, like the hinge of a door by man. There seems to be no more design in the variability of organic beings, and in the action of natural selection, than in the course which the wind blows."

The full bearing of this will not be clear until we have investigated the theory of natural selection, but the point is raised here by way of suggestion, because it is certainly a feature of Paley's teleology that it is anticipatory in its scope; and because it opens up for consideration a very serious problem which we shall endeavour to discuss later. Paley, as we have said, never states what degree of complexity he requires in a contrivance in order to render legitimate his appeal to the principle of design. It would, perhaps, have been impossible for him to do so. The problem would resemble the logical difficulty of determining the number of grains necessary to make a heap of corn. Yet we are confronted with this difficulty. If we come to the conclusion that purpose is operative

in the universe, is it operative everywhere? Is there such a thing as chance? Paley himself admits that chance, which he defines as "the operation of causes without design," might produce a wart, or a wen, or a mole, but nothing so complex as the eye. Darwin found himself involved in great difficulties over this question. In a letter to Asa Gray, the American botanist, in 1860, he writes: "I am inclined to look at everything as resulting from designed laws, with the details, whether good or bad, left to the working out of what we may call chance." Chance, here, would mean the undesigned interaction of these laws. The laws would be continually crossing each other in their operation, and at the points of intersection there would be a constant alteration of the conditions of equilibrium, from which changes would result, but the changes could not be called designed. Asa Gray believed in a directed stream of variation among organic forms. Darwin writes to him:[1] "I have been lately corresponding with Lyell, who, I think, adopts your idea of the stream of variation having been led or designed. I have asked him, whether he believes the shape

[1] *Charles Darwin*, chap. xiv., p. 249.

of my nose was designed. If he does, I have nothing more to say. If not, seeing what fanciers have done by selection of individual differences in the nasal bones of pigeons, I must think that it is illogical to suppose that the variations which natural selection preserves for the good of any being have been designed." The problem then, which we shall have later to discuss, is this—If there is design anywhere, is there design everywhere? If design is only partial in its scope, can we divide off the purposive from the non-purposive operations of Nature? Can a final philosophy admit of this distinction being made?

3. The third feature in Paley's teleology is the basis upon which the whole of his argument rests, his belief in the fixity and special creation of species. This may be called the cardinal article of Paley's creed, and it explains the particular form which his presentation of the design argument took. We deal with it last of all, because it forms a convenient bridge of transition to Darwin and the theory of natural selection. Paley, in common with the great majority of his contemporaries, believed that at some point in the past (he would allow you to put it as far back as you will) complex organisms, an original

pair, perhaps, to represent each species, were suddenly introduced by God's creative hand into ready-made conditions; while between each species God fixed immovable barriers. Now this belief in the immutability and special creation of species explains much of Paley's reasoning. If species were thus suddenly introduced into the world, a complex organism into complex conditions, then their presence indubitably affords evidence of design. Only designing mind could thus adjust, at a stroke, the two factors of living form and environment. The problem remains the same even if we admit, as the obvious facts of Nature compel us to admit, that organisms reproduce their kind by natural law. Paley never contended that every living creature was made directly by God. He discusses the hypothetical case of a watch, producing in the course of its movements another watch like itself; but he rightly argues that such a case of reproduction of kind gives you no explanation of the constitution and mechanism of either watch. You have still to ask how the original form came into being, and the only answer which Paley could give to that question was, that God launched it into existence by a special creative act of Divine power. At the

time no other answer was possible, for in Paley's day the belief in the immutability of species was almost universally shared by theologians and men of science. There were indeed foreshadowings of an evolutionary theory, but they were not numerous. Buffon by 1761 had come to believe in some degree in the mutability of species, though he still held to fixity of type among the larger animals. Erasmus Darwin in England was expressing strong evolutionist ideas. There were signs of the profound changes which were to come over the face of science. But Paley lived too early to be affected by them. Indeed, more than half a century after his death, the antagonism aroused by the publication of the *Origin* shows how deeply rooted was the belief in special creation and fixity of species. Paley, therefore, was supported in his views both by science and theology, and in our estimate of him we must take this fact into account. We must not forget that theology is not alone to blame for the doctrine of special creation. So long as science believed in the immutability of species, theology, passing on into a region which lay beyond the scope of science, was compelled to construe this immutability as resulting from an original special

creation. Science has not always been fair to theology in this matter. No doubt theologians have at times tried foolishly to defend the doctrine of special creation against evolutionary science, using as their weapon the Biblical narratives in the book of Genesis. In so far as they have done this, they have committed two mistakes. They are putting the Bible to a use for which it was never intended. The Bible is the teacher of religious and not of scientific truth. They are also misinterpreting the very chapters in Genesis upon which they rely. For there is nothing in those chapters to justify the belief in special creation. The late Aubrey Moore pointed out in his essay, *Darwinism and the Christian Faith*, how the influence of Milton, which has been great upon the whole range of what we may call popular Protestant theology, is largely responsible for the dissemination of this belief. In book vii. of *Paradise Lost* Milton gives us a graphic description of the process of creation, in which he pictures the various species of animals coming into being suddenly at the command of the Divine will. It happened also, as the same writer shows, that the first scientific attempt to define and fix the meaning of species coincided in point of time

with Milton's poem.[1] John Ray, a younger contemporary of Milton, was the author of the doctrine of the fixity of species. Science took up the conception, which was accepted by such scientific leaders as Linnæus and Cuvier, and became the orthodox creed in biology until it was displaced by the rival conception of evolution or transformation of species. It is impossible for us to-day to believe in the fixity of species or in special creation, and the fact that we cannot do so destroys Paley's teleological argument in the form in which he presented it. From this point we pass to a consideration of the work of Darwin.

[1] *Science and the Faith*, pp. 179, 180.

CHAPTER III

DARWIN AND THE THEORY OF NATURAL SELECTION

IN discussing the theory of evolution in its narrower meaning, as a theory dealing with the history and development of organisms, we must carefully distinguish between the fact of evolution and the method or methods of evolution. On the question of method there is room for difference of opinion, but as to the fact there can be little or no doubt that the theory of evolution must be accepted as the best hypothesis which science has been able to frame to cover the known results reached by the investigations of the morphologist, embryologist and palæontologist, and by inquiry into the geographical distribution of plants and animals. We are compelled by scientific evidence to believe that all organisms have arisen by progressive modification from a common stock. Even if we do not hold with Darwin that "all animals

are descended from at most only four or five progenitors, and plants from an equal or lesser number," we must give our assent to Wallace's statement that "every species has come into existence coincident both in space and time, with a pre-existing and closely allied species". The practical agreement of scientific men upon the point leaves us no alternative but to accept their opinion. Now the fact of evolution is destructive of Paley's argument, in the form in which he stated it. His appeal to special instances is largely, if not entirely, destroyed. For, according to the evolutionary theory, every structure is what it is only because a million other structures have been before it, each gradually growing more and more perfect, more adapted, that is, to the conditions under which the owner of the structure has to live. Paley points in triumph to the eye, with it myriad co-ordinations, and its marvellous pre-adaptation in the darkness of the womb for the future environment of light in which it will find itself, and argues that God alone could have designed such a structure. The evolutionist, in reply, produces a long series of eyes, beginning with the simple pigment-spot, sensitive to light and shade, and gradually growing more and more complex;

and urges that his complex eye is only the latest development in a historic succession of eyes; and that it has grown to be what it is because it is the inheritor of the cumulative, ancestral improvements of the organ in the past. Darwin himself writes—and his words have weight, as being the words of one, whose range of observation was extensive—"I have been astonished how rarely an organ can be named towards which no transitional grade is known to lead".[1]

But, it may be objected, has this destroyed Paley's argument from design? Is there less evidence of design because a structure has come slowly into being? If a cathedral takes twenty years to build, do we therefore infer that there was no architect? Are there not still present in organic structures all the marks of plan and purpose? In order adequately to discuss this objection we must come to closer quarters with the Darwinian theory. The sting of Darwin's attack on Paley does not lie solely, or even chiefly, in the fact that structures and adaptations have arisen slowly, but rather in the method which Darwin suggested as an ex-

[1] *Origin of Species*, sixth edition, p. 146.

planation of the evolutionary process. We pass, therefore, to consider the method of evolution, known as natural selection. Darwin himself believed that other factors, besides natural selection, were operative in the process of organic development; but the theory of natural selection, though it does not exhaust, still remains the central feature of Darwinism. A brief exposition of the theory is necessary, because, as the history of its first reception shows, it lends itself easily to misconstruction; and the misunderstandings of it which characterised its original appearance have not altogether disappeared.

The theory reposes upon a basis of three facts, of whose existence there is no question. (*a*) The fact of variability in organic forms. No child exactly resembles its parents. No two blades of grass, no two leaves, are precisely similar in all points. Nature is a home of infinite diversity, a realm of individuality. Organisms are everywhere plastic, and tend to display variations. (*b*) The fact of inheritance, by which ancestral characteristics are more or less faithfully reproduced in offspring. Inheritance and variability are complementary factors. They represent the conservative and liberal tendencies

in Nature's political system. (*c*) The fact of a tendency on the part of organisms to increase so rapidly that they outrun the limits of the food supply; from which results what is called the struggle for existence, a competition so severe, that a very slight advantage possessed by an organism over its neighbours may just make the difference in the all-important matter of survival or destruction in the race of life. Natural selection is a short-hand formula for expressing this group of facts, for saying that, owing to the struggle which goes on among living forms, those organisms, which have varied in a direction favourable to life-preservation, will tend to survive, and leave an equally or better adapted progeny, while those which have varied in an unfavourable direction will probably perish because they are unable to adapt themselves to their surroundings. What an organism has to do, if it would survive, is to accommodate itself to its environment. Organisms, as we have seen, are plastic or variable. Now among the variations which occur among living forms some must be in the direction of adapting their owners better to their environment, others must tend in the reverse direction. If the variation is favourable, it brings its owner into greater

harmony with his conditions of life. He will accordingly benefit in the struggle for existence, and will survive, and, through the influence of heredity, will tend to hand on his favourable variation to his progeny. The progeny will tend to possess these variations in a more perfect form than their parents, for inheritance acts cumulatively. Organisms whose variations are not favourable will be crushed out in the struggle. So keen is the competition that almost any variation may turn the scale between life and death. The nature of the environment determines whether a variation shall be reckoned favourable or not. Strength is not necessarily the criterion of advantage. Sometimes a keener scent may preserve a form, or greater swiftness or cunning, or the power to resist sudden changes of temperature, or the adoption of nocturnal habits, or protective colouring. Darwin's own words are: "This preservation of favourable individual differences and variations, and the destruction of those which are injurious, I have called Natural Selection, or the Survival of the Fittest".[1] And he adds: "It may metaphorically be said that Natural Selection is daily and

[1] *Origin of Species*, p. 58.

hourly scrutinising throughout the world the slightest variations; rejecting those that are bad; preserving and adding up all that are good; silently and insensibly working, whenever and wherever opportunity offers, at the improvement of each organic being, in relation to its organic and inorganic conditions of life".[1] This process goes on unendingly, for, not only do organisms vary, but the environment itself is constantly changing. If the environment did not change, one would hope in time to see a perfect adjustment effected between the organism and its surroundings. But, since the environment itself is subject to modification, there has to be a perpetually fresh process of adaptation on the part of the organism. Some organisms (and among them what we may reckon our oldest forms of life) seem to have effected a more or less complete adjustment, for they survive on almost unchanged; but, viewed broadly, the process is one of perpetual interaction between the two factors, resulting in constant alterations.

The phrase "natural selection" needs perhaps a word of explanation. In the quotation given

[1] *Origin of Species*, pp. 60, 61.

above Darwin uses the word "metaphorically" of the agency of natural selection. The word "select" is a word expressive of our own intelligent choice, but for Darwin the term was only a metaphor, as applied to Nature's working, and included nothing which could be in any way called intelligent activity. The source from which he derived the expression was his observation of the results achieved by the artificial selection practised by breeders and animal fanciers. It had long been known that strains could be improved by careful selection of animals for breeding purposes. Special qualities in a stock which a farmer or a fancier wished to perpetuate or improve could be so secured, if care was taken to breed only from those animals which possessed the quality in question. Darwin, observing this fact, and seeing the extraordinary results achieved by this artificial selection, set about to discover whether there was not some cause at work in Nature, which might account for the obvious fact of progressive differentiation among organisms. He claimed to have found such a cause, and he called it Natural Selection, the unintelligent selection practised by Nature.

Now, for the believer in final causes the crux of the situation lies just here, in the way in

which Darwin conceived of the relation between the two factors of organism and environment. A defender of the argument from design would naturally incline to adopt one of two hypotheses to explain the adjustment and accommodation which exist between organisms and their surroundings. He would either, with Paley, invoke the aid of an external regulator, God, who adapts the organism to its environment; or he would call in the aid of some internal, regulative force, working within the organism, which brings it into harmony with its conditions of life. But Darwin dispenses with both these alternatives. He offers to explain, by a self-acting, mechanical process, the adaptation of organism to environment, without any hypothesis of external accommodation or internal control. Owing to the plasticity and variability of organisms the adjustment is, not of the environment to the organism, but of the organism to the environment. But (and here lies the central point of the Darwinian theory) organisms vary without any purpose, and it is a mere chance whether the variations of any organism fit in with the environment. The two factors are viewed as standing in a purely external relation to each other. It is as if you had a set of marbles on

a tray, and then tilted the tray. The marbles would roll about and collide until a new equilibrium was effected. In like manner do the changes in organism and environment collide, until an equilibrium, more or less stable, is reached. One should, perhaps, qualify the phrase just used "purely external relation"; for the relation of the two factors of organism and environment depends upon the general conditions of evolution, and the relation might, in a deeper view, be regarded as intrinsic. The point is, that adaptations are viewed as resulting from the interaction of organisms and surroundings, in accordance with fixed conditions; and that this interaction is interpreted in mechanical terms, in the way in which the physicist would describe the interaction of two particles of matter. Whether any two things which interact can ultimately be interpreted in terms of mechanism is a problem for later discussion.

We may state the Darwinian position in two other ways. We may call it, first, a theory of accidental variations. Accidental does not, it is clear, mean causeless. Nothing happens without a cause. But it means indefinite, undesigned. The variations which occur in organisms are accidental, in the sense that there is nothing to

determine them in one direction rather than another. They form the rude, unsorted, promiscuous material from which the selection is to take place. As regards the selective agency in Nature they are accidental; that is, as far as natural selection is concerned, it matters not whether an organism varies in one direction rather than in another. And it is for natural selection immaterial what the causes of variations are. In other words, organisms try random experiments in variation. As Huxley put it, it is a method of advance by "trial and error, worked by unintelligent agents". The same writer uses a graphic simile to describe the method. The older teleology, he says, regarded each adaptation as a rifle bullet fired direct at a mark, whereas Darwin has shown that adaptations are like grape-shot, of which, while many fall wide of the mark, some hit it. "For the teleologist an organism exists, because it was made for the conditions in which it is found: for the Darwinian an organism exists, because, out of many of its kind, it is the only one which has been able to persist in the conditions in which it is found."[1] Limits, certainly, there

[1] *Darwiniana:* Essay entitled "Criticisms on the Origin of Species".

are to variability, those, for instance, imposed by the physical constitution of each organism. But within these limits variations are indefinite.

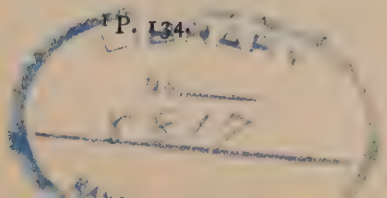
Or we may describe the theory in another way, by saying that it denies the existence of any causal relation between the environment and the requirements of an organism. If organisms have to live in an environment, one would naturally imagine that they would somehow be adjusted beforehand to it. And, since environment does cause changes in organisms (light and heat, for example, affect them), one would be inclined to think that it would cause such modifications as would better adapt them to their conditions of life. But this is denied by the theory. The changes caused by the environment in the organism are indefinite, and not necessarily in the direction of better adapting the plant or animal to its surroundings. There are as many chances in favour of the environment causing a harmful variation as there are in favour of its causing a beneficial one.

We have already quoted a sentence from the *Autobiography* showing how Darwin was of opinion that his theory had destroyed teleology; and, if one faces fairly the Darwinian explanation of the adaptations which confront us in

Nature, one must admit that the statement of the argument from design has to be profoundly modified. Any adaptation, however complex or exquisite, has arisen through a gradual process of perfecting, in which each generation becomes the heir of the fortunate variations of its predecessors which have been preserved by heredity. The advance is due to the accumulation through inheritance of accidental variations, which at the time of their occurrence were not guided by any reference to the needs of the animal. The adaptation arose with the growth of the variations themselves. There was no future reference to the requirements of the organism. Thus the seeming prevision, which in the womb fits the eye for an environment which is yet to be, is explained away, and the adaptation is accounted for by the influence of heredity, which preserves each stage already reached and heightens its utility. Darwin's own words about the eye in the *Origin of Species* may well be quoted: "Reason tells me that, if numerous gradations from a simple and imperfect eye to one complex and perfect can be shown to exist, each grade being useful to its possessor, as is certainly the case; if, further, the eye ever varies, and the variations be inherited, as is

likewise certainly the case; and if such variations should be useful to any animal under changing conditions of life, then the difficulty of believing that a perfect and complex eye could be formed by natural selection, though insuperable by our imagination, should not be considered as subversive of the theory".[1]

The theory of natural selection, then, seems to place the believer in the presence of design in the organic world face to face with the following three positions. (*a*) The existing order of the world, with its series of graded modifications, its intricacies of structure, its exquisite adaptations, is the relic of a mass of changes which were effected in earlier ages without any design or purpose. The forms that exist—*rari nantes in gurgite vasto*—are merely the happy survivors of a host of other forms, whose variations did not enable them to compete successfully in the struggle for existence. We who look on are the victims of a great illusion. Seeming order and plan are really the result of chance interactions through innumerable ages, of happy hits effected between the variations of organisms and the variations of environment. Plan and pur-


P. 134.

pose have vanished and the changes of plants and animals are like the meaningless dance of thistledown in an autumn breeze. (*b*) No adaptation, however marvellous, can be taken singly and treated in isolation. For every structure is what it is only because innumerable others have been before it, each gradually growing more adapted to its surrounding conditions, each representing one more stage towards Nature's goal (if Nature can be said to have a goal) of complete adaptation of organism to environment. (*c*) It would appear difficult to speak at all of ends in Nature. Everything is becoming, nothing is. Not product, but process, is the word which characterises Nature. Organisms appear and then vanish to make room for others. The river of life streams on endlessly and the value of each drop of water is just the value of its individual contribution to the total volume of the river. The survival of the fittest is but the temporary finding of a new equilibrium. Tennyson's hope, so beautifully expressed in *In Memoriam* :—

> That nothing walks with aimless feet,
> That not one life shall be destroyed,
> Or cast as rubbish to the void,
> When God hath made the pile complete;

> That not a worm is cloven in vain;
> That not a moth with vain desire
> Is shrivelled in a fruitless fire,
> Or but subserves another's gain;

that hope is illusory, unless, indeed, we can find reason for believing that Darwinism is not a complete account of the facts which it proposes to interpret, and that the mechanical explanation of Nature's processes has to be supplemented by other explanations, in which conceptions of value and significance play their part, and in which more consideration shall be given to the fact that Nature is an orderly and systematic whole. A deeper inquiry is needed before we can abandon our teleological convictions.

CHAPTER IV

IMPLICATIONS OF THE CONCEPTION OF PROGRESS

IN our criticism of the Darwinian theory we shall deal with the three following questions: (*a*) What are the implications of the conception of Progress? (*b*) What are the implications of the conception of Order? (*c*) Are there not involved in the theory factors possessed of a character essentially teleological? The last question is, to some extent, bound up with the two former ones, but we shall endeavour to preserve the distinctness of the three discussions. The present chapter deals with the implications of the conception of Progress.

Progress is a fact. As we trace out the story of the world's development we cannot fail to admit that there has been progress and advance, though not, indeed, everywhere, nor along a single line. Development includes retrogression.

There are many back currents and side arms to the stream of evolution. In the world of organic life there are degenerate forms, such as parasites; in human history the march of civilisation has often been arrested. But within the total movement we do trace out a definite path of progress. The world of inorganic matter has been succeeded by the world of life. Within the world of life itself, the world with which we are chiefly concerned in our criticism of Darwinism, there has been movement upward from very simple single-celled organisms to man; there has been the gradual emergence of a series of living forms, structurally more complex, and in the case of man, with his self-conscious reason and morality, ethically higher. And though it may be harder to discover a clear path of progress in human history, where movements appear often retrograde or cyclic, still it can hardly be denied that civilised man does represent an advance upon his savage ancestors. The fact of progress is, then, plain, and it calls for an explanation. Now the very conception of progress is essentially teleological, involving, that is, the idea of an end or goal. You have a series of living forms, for example, and you say that the series shows marks of progress, that there has been advance.

You are judging the series by a standard or criterion which is none other than the highest stage reached by the series in its evolution. You take this highest stage and you compare the lower stages with it, and appraise them accordingly. The series is read by you as a series moving towards an end, and in the light of that end you judge the various members of the series. The development is, for your thought, not a mere sequence of changes, but a sequence of changes interpreted in the light of an end. You are judging teleologically. If the evolutionist, then, speaks of the vertebrates as being higher than the invertebrates, or of the many-celled animals as being higher than the single-celled animals, he is using as his standard of judgment the criterion of complexity of structure, and he takes the most complex organism in the series as the end or goal towards which the whole development of the series has been tending. He has in his mind some standard of value by which he judges of each member of the series. The words "higher" and "lower" have no meaning, except in reference to some standard. Not infrequently the word "higher" carries with it an ethical significance. Of two moral acts, or two motives, we call one higher than the other.

It is worth more, of more value, when judged by the ethical standard. This ethical meaning should be kept carefully distinct from other meanings of the word. In fact, whenever we use the word "higher," we should make clear to ourselves what is the particular criterion or standard which we have in mind. Complexity of structure is one criterion by which we judge of the evolution of organisms; but we might also attempt to place organisms in a serial order, according to the degree of reason or self-consciousness which we deem them to possess. The interesting thing about man is, that, while he is structurally the most complex form, he is also the most rational and the most ethical, if indeed he is not the only ethical form. The physical and spiritual developments have taken place together, as two sides of a single process, and in judging of the process we take our criterion now from the one side and now from the other. But whatever our criterion may be, it is necessary, if we would give any adequate meaning to the word "development" or "evolution," that we should have a criterion; and, in all cases, we derive our criterion from some term or stage in the development which we cannot help interpreting as the end towards which the develop-

ment is moving. Progress has no meaning, unless it is construed teleologically.

Bearing in mind, then, the fact that we are concerned to criticise the theory of natural selection, and confining our attention, accordingly, to the world of organic forms, we proceed to ask whether natural selection can account for the progress which we observe as we trace out the evolutionary history of organisms. The contention of this chapter is that natural selection offers no final explanation of the fact of progress; or, rather, that it can only explain progress by making certain assumptions, into the nature of which the believer in final causes must very carefully inquire. If we take as our standard complexity of structure, then we shall say that progress has been brought about by the cumulative inheritance of favourable variations which were in the direction of greater structural complexity. Each generation progressed, because it inherited in a cumulative form, and itself added something to, the variations of earlier generations which were in the direction of advance. If there had been no variations tending in the direction of progress, progress, obviously, would not have occurred. Natural selection, in other words, is not a theory

of origins, as Darwin readily admitted. It takes variability among organisms as one of the *data* from which it starts, just as it takes the fact of inheritance or of the tendency to a rapid increase in number. If you remove any one of the three great foundation-stones of the theory the whole theory collapses. Thus, without variability natural selection would have no material upon which to work. There would be nothing to select. If we remove the fact of inheritance there could be no possibility of progress or of the production of so-called specific and generic kinds. If, finally, there were no struggle for existence there would be no *præmium* set upon advantageous variations, but each creature would have room to vary indefinitely, and would pay no penalty for harmful variations, provided they were not themselves of a nature to lead to death. The essentials of the whole theory, therefore, lie in its presuppositions, and the most important of these for the teleologist is the fact of variability. There could, then, be no progress, if among the variations which occur were not some leading in the direction of progress. But to admit this is to send us back behind natural selection to the fundamental molecular processes which take

place within the living substance of an organism. We still await an answer to the question, why the variations of living matter have been of such a nature as to produce the world of ordered progress which meets our eye.

Natural selection is a theory professing to explain adaptations. It forms no part of the theory that adaptations should be progressive. If need arose, if climatic changes, for example, required it, there is no reason, so far as natural selection is concerned, why the whole earth should not become populated solely with toadstools and mussels. Natural selection deals with the variations which occur, of whatever kind they may be. In the case of parasites there has been for the most part degeneration, not advance, parasites, in many instances, having lost their locomotive organs and having adopted a stationary life, feeding on the bodies of their hosts. Yet parasites, equally with more progressive organisms, have survived, because they have adapted themselves to their surroundings. In his essay, *Criticisms on the Origin of Species*, Huxley makes this point clear. He writes: "So far from any gradual progress towards perfection forming any necessary part of the Darwinian creed, it appears to us that it is per-

fectly consistent with indefinite persistence in one state or with a gradual retrogression. Suppose, for example, a return of the glacial period and a spread of polar climatal conditions over the whole globe. The operation of natural selection under these circumstances would tend, on the whole, to the weeding-out of the higher organisms and the cherishing of the lower forms of life."[1]

For the explanation, then, of progress we are thrown back upon the fact of variability, and the problem that confronts us is this: Does the fact that variations in the direction of progress have occurred give us any ground for believing that there has been somewhere at work a principle of design or purpose? Does not the believer in final causes find in the fact of progress a secure anchorage? A discussion of this question involves a discussion of the problem of variability among organisms. What we have to determine is the range and extent of variation and the causes of it; and, in particular, the problem, whether we can believe in a directed stream of variation, or whether we must hold that all variation is accidental and indefinite in the

[1] *Darwiniana*, vol. ii., pp. 90, 91.

sense above described. We have to confess at once that no satisfactory solution of this problem is at present possible. Biological investigation has, as yet, reached but few assured results. The causes of variation have not been determined with any certainty. The field is one on which biologists are busily engaged in working at the present time, so that conclusions can be regarded only as tentative. But it is possible (and for the purpose of this volume it is all that is required) to indicate certain lines upon which any discussion of the problem must move.

The problem is primarily one which turns upon the observation of facts. It should be possible, by observation and experiment, to determine statistically the actual range of variation, and inquiry is being more and more directed along this channel. But the problem is also one of theory and hypothesis, of tentative endeavours to supply some explanation of the method of evolution, and it is in this light that we propose immediately to consider it.

Natural science makes it her ideal to explain everything in terms of mechanism. Biology is reduced to the level of physics. The biologist, therefore, sets about his task resolved to dispense,

if he can, with all principles of explanation which are not mechanical. He would at once rule out of court any reference to the principle of design or intelligent control, for the use of such a principle contradicts the ideal of his science. How then is he to deal with the question of the range of variability? He must assume, at the outset, that variations are indefinite, that there is nothing to determine them in any one direction more than in any other. The opposite assumption would leave him confronted with a factor which could not be brought within the compass of his mechanical theory. By assuming an indefinite variability as the material upon which natural selection works, the biologist is able to attribute to chance the adaptations which occur among organisms. For, however striking an adaptation may be, however apparently indicative of design, you can always make a show of explaining its occurrence, if you assume that it is only one out of an indefinite number of other possibilities which might have occurred. It is always possible to maintain, without self-contradiction, that if you tossed the letters of the alphabet often enough, the combination of them into a lyric poem might take place. The general assumption which underlies any investigation of

statistical laws is, that, while the range of variation is indefinite, yet departures from the mean at either end of the scale will neutralise each other. In the same way it is suggested that Darwin assumed that variability was indefinite, that in the struggle for existence unfavourable variations would be eliminated, and that whatever results might be achieved would be due solely to the influence of natural selection.[1] From this point of view, and if we grant for the moment the validity of this criticism, indefinite variability is a hypothesis made in the interests of a theory. Whether it is also a fact is a question which awaits our consideration. It is worth while to dwell upon the point just raised because there is such a thing as the manipulation, conscious or unconscious, of facts in the interest of a speculative position. There is also, in some quarters, a tendency to assume that physical science must be right in her explanations, and that the principles with which she investigates are the final principles which must govern all inquiry.

[1] See "Darwinism and Design" in Mr. F. C. S. Schiller's volume of essays *Humanism*, where this point is fully worked out. I am indebted to Mr. Schiller for some suggestions made by him in a correspondence between us a few years ago.

It is often forgotten that science attempts to interpret the world only from a certain point of view; and this method of abstraction, while abundantly justified as a means of simplifying any given problem and of facilitating inquiry, may create a bias or prejudice which is the negation of the true scientific temper. Science is right in framing any hypothesis she chooses and interpreting facts from any point of view. The psychologist, for example, may assume that the will is not free, for the purposes of his inquiry, because he desires to eliminate any variable or incalculable factor which may render impossible the treatment of his subject-matter as a strict science. The older political economy regarded man purely as a wealth-loving animal, and left out of account the fact that he is also a social and moral being, and that these additional characteristics of his nature must react upon his desire for wealth.[1] Her procedure was enormously simplified by this hypothesis, but the results reached by the science are highly abstract and cannot be regarded as a complete explanation of the facts in question.

One has no desire to be unfair to Darwinism,

[1] Mr. Schiller's illustration, *op. cit.*, pp. 146, 147.

but it may not be amiss to call attention to three other examples which illustrate the hypothetical character of the theory, more particularly, perhaps, in its later and neo-Darwinian developments. It is extraordinary how, by the exercise of a little ingenuity, the theory can be made to fit all the facts. (*a*) Take, first, the question, whether variations are always slight or infinitesimal, and whether advance has been made by the accumulation of these minute changes; whether the maxim is true that Nature works always gradually and does nothing by a leap or jump. It seems at first sight impossible that such a complex structure as the eye could have arisen by slow stages from so rudimentary a condition as that of a mere pigment spot, sensitive to light and shade. Darwin, however, writes: "Although the belief that an organ so perfect as the eye could have been formed by natural selection is enough to stagger any one, yet in the case of any organ, if we know of a long series of gradations in complexity, each good for its possessor, then, under changing conditions of life, there is no logical impossibility in the acquirement of any conceivable degree of perfection through natural selection." [1]

[1] *Origin of Species*, p. 154.

There is no *logical* impossibility. True, but may not the hypothesis that every structure has arisen by slow modification from simpler structures have blinded inquirers to the facts of variability? For to-day we find biologists asserting, as indeed Huxley asserted in 1864, that variations need not always be slight or infinitesimal, but that large or "discontinuous" variations do constantly occur.[1] (*b*) Take, again, the question of the utility of an organ or variation. That every variation must be of use to its possessor, if it is to be preserved by natural selection, is an essential article of the Darwinian creed. And so you find biologists exercising their brains to discover the uses to which structures may be put, and two inquirers sometimes arrive at different conclusions. Curiously enough, it is just the characters which are most constant and specific, that is, which most surely characterise species, such as minute markings on a shell, which seem to have no conceivable utility. If you assume as a preliminary starting-point that every variation must be useful, you have an endless field for speculation in the discovery of uses. But may not your hypothesis possibly be blinding you to the fact that not all characters

[1] See Bateson, *Materials for the Study of Variation.*

possess selection-value, but that non-adaptive characters may also be preserved? And may you not thus be tending unduly to limit the possible causes and methods of evolution by giving natural selection, with its canon of utility, the control of the whole process? Here, again, we find investigators who question the truth of this initial assumption. The principles of the theory were enunciated and were found applicable to many of the facts. Then the assumption was made that they were the only principles, and, speculatively, Darwinians could show much logical probability on their side. But it is at least possible that they were thereby hindered from an impartial examination of all the facts. Only now, after a lapse of many years, is a full inquiry into the whole problem of variability being undertaken, and also into that of heredity, with a view to determining whether, after all, non-adaptive characters may not be preserved, whether, that is, the canon of utility exhausts the nature of an organism as regards its individual qualities and structures.[1] (*c*) Finally,

[1] See Bateson, *op. cit.*, p. 79: "While the only test of utility is the success of the organism, even this does not indicate the utility of one part of the economy, but rather the net fitness of the whole".

take the vexed question, whether acquired characters can be inherited. Weismann, a neo-Darwinian of the extreme school, has constructed a theory of heredity which even his most ardent defenders must admit to be highly speculative in character. It is unnecessary here to enter into the details of the theory, except to say this, that it turns upon the making of a sharp distinction between the germ-plasm, or race substance of heredity, and the body-plasm or cells, of which the body is composed. What affects the latter, says Weismann, cannot affect the former. Characters acquired by the individual organism in its lifetime cannot therefore be transmitted to a subsequent generation. If you produce an example of what seems to be an acquired character, Weismann meets you by asserting that the character has been latent all along in the germ-plasm, and has only been awaiting the appropriate condition and stimulus to call it out. Every apparently acquired character can always be treated as a congenital or race character which has been lying latent in the complex germ-plasm. The evidence for the inheritance of acquired characters is, certainly, very slight, and the task of determining in any case whether a given character is a genuinely acquired character is

extraordinarily difficult, and this gives stability to Weismann's position. Yet one cannot but feel that there is danger lest a speculative theory of heredity may prejudice investigators in their inquiry into the facts.

We have seen that natural selection is no theory of origins but takes variability in organisms for granted. We have also seen that, if we would explain progress, we must endeavour to determine why it is that variations in the direction of progress have occurred. We are driven back upon the hidden molecular processes which occur in the living substance of organisms. We have to investigate the facts of variability. We wish to discover if there is any ground for asserting that the stream of variation is directed ; if the facts of variability will admit of the application of the teleological principle in some form or other. Let us repeat, once more, that no adequate treatment of this question is at present possible. Scientific opinion is still in an unsettled condition. Only in comparatively recent years has the problem of variability been carefully investigated, and conclusions are necessarily tentative. All that we can do is to sketch out, so far as our knowledge permits, some of the

main lines upon which investigation is proceeding, and to indicate the nature of the problems involved. Speaking broadly, we may say that there are three main views to be considered. (*a*) There are the views of those who maintain that variations are directed by some special regulative power or principle in the organism. (*b*) There are the views of those who consider that the two factors of organism and environment are accidentally related to each other, and that there is no causal connection between the influence of the environment and the requirements of an organism. (*c*) Lastly, there are those who believe that there is some predetermined relation between the two factors, so that, in some way, the environment can influence the organism to vary in directions which adapt it better to its surroundings. We will take these views in turn.

(*a*) That variations are directed by some inner principle of control in the organism is a view which has been adopted, and is still maintained by some inquirers, though the nature of the controlling power is variously described. In Germany, for example, a view of this kind has found favour with Von Baer and Von Hartmann, and in America with Dr. Cope.

Von Hartmann asserts that, along with the mechanical forces at work in each organism, is operating some non-mechanical power whose action is as continuous as theirs. Von Baer thought that this power acted intermittently, presumably just at those points where striking favourable variations occurred, which gave a lift, as it were, to the whole development. Von Hartmann makes the assumption of the existence of this non-mechanical power on two grounds ; first, because it is only an unlimited and indefinite variability, which will explain adaptation by selection ; secondly, because, as a matter of fact, variation takes place in fixed directions. The former is an assertion based on the logical requirements of a theory ; the latter is, in the opinion of its author, supported by observed facts.

The most effective criticism of this position is to ask what evidence there is of the existence of this regulative principle of control. The answer is, that there is none. Its existence is purely hypothetical. The assumption is also open to certain grave objections. How, for instance, can we ever hope to form any conception of the working of this regulative factor? It is a purely unknown quantity, from handling

which science not unnaturally shrinks. For to accept the belief in the existence of any such non-mechanical principle is to abandon the ideal of natural science which is to press to its furthest limit the mechanical principle of explanation. The gradual bringing of new regions under the dominance of mechanical modes of explanation remains one of the greatest triumphs of modern scientific inquiry. Every day the links are being multiplied which connect the organic with the inorganic world, and the fount of the scientific man's inspiration is the hope that one day the phenomena of life will prove amenable to mechanical explanation. We can, then, see clearly why men of science are unwilling to admit the existence of such a factor, and, in particular, why the believer in the universal efficiency of natural selection is so unwilling. For what is called in question is the strictly mechanical character of natural selection and its pre-suppositions. As Weismann well says in his *Studies in the Theory of Descent:* "It is certainly the absence of a theoretical definition of variability which always leaves open the door for smuggling in a teleological power. A mechanical explanation of variability must form the basis of this side of natural selection."

Bateson in his volume, *Materials for the Study of Variation*, denies that all change is slight and infinitesimal, and produces much evidence to show that variations may be large or "discontinous," in a word, that Nature does work by leaps. But he does not conclude from this fact that there must be some inner, non-mechanical, regulative force, which is operative just at those points where a large and useful variation suddenly emerges. On the contrary, he suggests that the definiteness and discontinuity of the variations is determined mechanically; for example, "that the patterns into which the tissues of animals are divided represent positions in which the forces that effect the division are in equilibrium."[1] He suggests, further, that there may be "an analogy between the discontinuity of some substantive variations (such as those occurring in the colours of flowers) and that of chemical discontinuity."[2] We are not, therefore, to assume the existence of unknown forces until it has been demonstrated that known forces are insufficient to explain the facts. On the other hand, the hypothesis of some non-mechanical and regulative power reminds us that we are

[1] P. 70. [2] P. 71.

entirely ignorant of the relation in which physical and spiritual factors stand to each other. What we do know is this, that in man the physical and mental series are in close correlation, and the idea of development would suggest that there has been an evolution of the spiritual factor proceeding parallel to the evolution of the physical all down the scale. There may therefore (may we not say there must?) be at work some spiritual factor. Life has not been successfully interpreted in terms of mechanism, and, as we shall see later, a merely mechanical explanation even of inorganic matter is impossible. But to assert this is something very different from isolating out this spiritual factor and treating it as a detached quantity or force; which is really equivalent to reducing it to the mechanical level. The operations of any spiritual factor cannot be treated as if they were similar in kind to the operations of mechanical forces.

(*b*) We have already discussed the second view, the view of those who, relying on the all-sufficiency of natural selection as the sole method of evolution, maintain that organism and environment are accidentally related, and that there is no causal connection between the action of the surroundings and useful changes

in the organism. And we have suggested that it is possible that the hypothesis of indefinite variability was made in the interests of a theory. At the same time it is but fair to quote the words of a biologist like Wallace, in chapter iii. of *Darwinism*, which deals with "Variability of Species in a State of Nature". Wallace is concerned to show that the range of variation among organic forms, which actually does occur, is enormous, and may practically be called unlimited.

"Variation, in abundant or typical species, is always present in ample amount; it exists in all parts and organs; these vary for the most part independently, so that any required combination of variations can be secured; . . . consequently the right or favourable variations are so frequently present that the unerring power of natural selection never wants materials to work upon." Wallace, that is, absolutely denies the statement that there is some agency which determines variation in the right direction. While admitting that the environment may cause variations in organisms, he denies that it necessarily causes useful or adaptive ones.

(*c*) We have to deal, thirdly, with the view that there is some causal relation between the influence of the environment and useful changes

in the organism. Here it is necessary to subdivide the opinions of members of this school. (1) There are those who maintain that the environment exercises a *direct* influence on the organism, causing it to form definite variations, which are always in the direction of better adaptation to itself. They are chiefly botanists, who hold this opinion. We may take Professor George Henslow as a typical champion of this contention; and what we have to say upon the point is derived from his book, *The Origin of Plant-Structures by Self-Adaptation to the Environment.* We must notice the latter half of the title of the volume. He writes that the differences in structure among plants "are due to the responsive power of protoplasm, which, under the influences of the external forces of the environment, builds up just those tissues which are best fitted to be in harmony with the environment in question".[1] Henslow denies absolutely the cardinal tenet of the Darwinian. Variations in Nature, as opposed to those in cultivated forms, are never indefinite but always definite. His book is an attack upon the theory of natural selection. He wishes to discover if

[1] P. 14.

natural selection supplies any aid in originating species. He settles that it is not needed because the environment "itself induces a plant to form definite and not indefinite variations in Nature"; and these "definite variations are always in the direction of adaptation to the environment itself".[1] He claims to have proved his contention by experiment and observation. He instances desert plants, among others, and says that if you place a plant in a desert it immediately begins to change, and change in the direction of adaptation to its conditions of life. It grows fleshy, producing tissues which can hold water and are bad conductors of heat. Its leaves often change to spines, the change effecting a useful economy of vital power. The view of the believer in natural selection is that the plant varies indefinitely, either from certain internal causes or from the indefinite irritating action of the environment upon it. Among the indefinite variations which occur are some which are in the direction of adaptation to environment, and these, being useful, are preserved by natural selection. Henslow's view is that the environment calls out these very adaptations. The

[1] *Op. cit.*, preface, p. 8.

environment excites the variability latent in the plant and turns it into particular channels. There is implied a close correlation and causal connection between the two factors. (2) The other school maintains that the action of the environment is *indirect* and takes place through the inherited effects of use and disuse by which organs and structures are either improved or atrophied. This was Lamarck's view in the *Philosophie Zoologique*: "Environment can effect no direct changes whatever upon the organisation of animals, but change is brought about only through the reaction of the organism to the stimulation of the environment". Darwin and Herbert Spencer were both stout supporters of this opinion. Darwin takes the case of an organism finding itself in altered conditions of life, a wild duck, for example, confined in captivity. It flies, he tells us, less, and walks more, than the wild duck, and its limb bones have become diminished and increased in a corresponding manner in comparison with those of the wild duck. Use and disuse have gradually brought about these structural modifications. The modifications have been inherited, and thus large changes have been slowly effected. At the present time such a view is confronted with

a grave difficulty, the difficulty arising from the uncertainty whether acquired characters can be transmitted by heredity to subsequent generations.

We shall do well to remind ourselves at this point that Darwin's own judgment upon all these questions was extraordinarily broad and balanced. He took a large and comprehensive view of the vexed problem of the factors of evolution. He never asserted that natural selection was the sole operative principle. As to the question of the causes of variability in organisms, he saw plainly the complexity of the problem, and the probability that many co-operating causes were at work. Later inquirers have, as a rule, taken up one element in Darwin's system and have emphasised that to the exclusion of other elements, with detriment to the cause of truth which they have at heart. A recurrence, therefore, to Darwin's own writings is an absolute essential for all who would understand what evolution in biology means. His was the master light, the white light of a sane and liberal reason. That light has passed through the prism of lesser minds, has been broken up into its constituent rays, one or other of which we are often asked to accept, as if it were the full

splendour. This, perhaps, always happens in the case of an original and creative mind. It certainly was so with Kant. Later developments of philosophy consist largely in taking up and applying certain elements in his comprehensive thought to the exclusion of other elements. At the same time it is given to no one to say the last word upon any subject. Biology has made great advance since Darwin's day, particularly as regards the problem of the range and causes of variability.

We have, in conclusion, to ask what is the attitude of the believer in final causes towards these various biological theories, and more generally towards the broad and undoubted fact of progress. With the first, the theory of some non-mechanical regulative factor, he is obviously in sympathy, though we have seen reason to reject the theory. With the second he is not in sympathy. Instinctively he feels that an orderly and progressive system cannot have arisen out of the accidental interaction of the two variables, organism and environment ; and he demands more evidence that variation is as indefinite as it is assumed to be. Even if he were forced to admit that natural selection is the sole factor in organic evolution he would

fall back, as we shall see in the succeeding chapter, upon the contention that some application of the principle of design is necessary, if you would explain the original constitution of matter from which the whole orderly evolution has proceeded. The third view, which maintains that the environment is in causal relation to useful or adaptive changes in the organism, clearly appeals to him, for the chance interaction of the two factors has vanished, and there is substituted for it something in the nature of a correlation or pre-established harmony, which is more in accord with the striking appearance of design afforded by the world of living forms. Turning our attention, then, to the broad fact of progress, we seem compelled to interpret it in teleological terms. The very idea of progress, as we have said, involves the conception of an end. Progress is change determined towards an end. This at least is the way in which we are compelled to read the meaning of the word. It is true, indeed, that this does not prove that the progressive development of the world is designed, but it renders it natural for us to ask whether we may not apply to the movement of the universe a conception which certainly applies to human activity and of which

the movement of the universe will admit. To the conception of a static order, which our fathers possessed, we have to add that of an orderly development or evolution, whose march is measured not by decades or centuries but by thousands of years, whose scale is so gigantic that our imaginations are overpowered as we reflect upon it. A panorama, vaster than that dreamed of by any other age, has opened out before us, and we realise in a unique manner the marvels of the universe by which we are surrounded. The whole conception of a progressive development seems to render more apparent those indications of plan and purpose which by a kind of native intuition man has seen, and always will see, in the construction of the world. How native and natural this teleological attitude is to man may be illustrated from the writings of Darwin or any advocate of natural selection. They wish to do away with any reference to design or purpose, yet they are compelled to use teleological language. Utility is the key-note of the theory. Only those changes are preserved which are useful. Useful for what? The very conception implies a reference to an end. Nature is everywhere treated by them as a system of means and ends,

and they are always asking what purpose a variation serves. They best prosecute their anti-teleological crusade by donning the armour of the teleologist. It is impossible for us to rid our minds of the conception of purpose or design. But not only do we see progress, not only do we see, especially in the organic world, adaptations subtle and exquisite, but we are confronted by this fact, that the process of evolution has been crowned by the advent of man and seems to have been directed towards the production of man. In the presence of man we seem to read the meaning of the age-long striving of the past. As we shall see later, the end in any development is the explanation of the beginning, not the beginning of the end. No development can be adequately interpreted unless the process is read in the light of the goal toward which it moves. When we survey the whole evolutionary movement, and observe its culmination in man, it becomes natural for us to regard all the earlier stages as prophetic of the goal finally attained. They win a richer and fuller meaning when read in relation to ourselves. We are not arguing that the colour of the rose was made with the sole purpose of delighting the eye of man, or the taste of the

grape to gratify his palate. To say this would be to parallel Paley's naïve argument that poisonous snakes exist in Africa for the purpose of warning off intending settlers.[1] All we contend is, that, viewed broadly, the whole process of evolution seems to have been directed towards the production of man. Nor are we denying that ends other, and possibly higher, than man's welfare may be served by these adaptations. But even if there are higher ends this does not alter the fact that natural processes, with their myriad adjustments, find a culmination in man.

The greater does not exclude the less. Because a road which passes through one town ultimately reaches another, we cannot argue that the maker of the road did not intend to reach the nearer town. Our conviction is not shaken if we are told that we are making man the measure of the universe. Further, when we go on to consider the nature of man, his moral and spiritual worth, those of us, at any rate, who believe that materialism is an impossible creed, and who are convinced that the universe must ultimately be explained in terms of mind or spirit, will all the more feel the force of the

[1] *Natural Theology*, chap. xxvi.

argument just stated. Our general outlook to-day is no whit less teleological, nay, it is more teleological, than it was before. There is such a thing, as has been said, as a miracle of unbelief. Is it easier to believe that this orderly and progressive development is the result of the working of blind, unconscious power, or of the fortuitous clash of atoms "ruining along the illimitable inane," rather than the slow accomplishment of a great Divine plan, the expression of a mind, infinitely vaster than, yet genuinely akin to, our human reason?

CHAPTER V

IMPLICATIONS OF THE CONCEPTION OF ORDER

IN considering the fact of progress we have already touched upon the problem of order, for progress is part of order. But order is the wider conception, and order may express itself in manifold ways. We go on, therefore, to investigate the implications of the conception of order from a somewhat broader point of view. Let us first note that evolution is not a self-explanatory term. Evolution is a word which is merely descriptive. It describes a phenomenal process. To narrate the history of any development, to set it forth in the sequence of its successive movements, is not to explain it. The demands of my reason are in no way satisfied when you tell me that it is by gradual stages that the acorn has grown into the oak, or that the planetary system has resulted from the slow cooling down of a nebulous and gaseous mass.

I still want to know how there ever came to be an acorn at all, or why the gaseous mass took the particular path of development which it has taken. Just as the essentials of the theory of natural selection lie in its presuppositions, so the conception of evolution as a whole sends us back to the original conditions which govern and underlie the total movement. In other words, we ask two fundamental questions. What is the origin of the whole process of evolution, what the source from which it springs? Why has the process been directed and determined along the particular lines which we see it follow? There is a problem of origin, and a problem of direction.

(*a*) With regard to the former problem, we must admit frankly at the outset that it is a problem which we cannot completely solve, for the very good reason that we were not present in the grey dawn of being to see what actually did take place. But there are certain aspects of the problem which we can discuss, with some fair hope of arriving at a satisfactory conclusion. The universe is an orderly universe. No one can deny that. It is a system whose life goes on under fixed conditions. Nature is a home of law, and the laws of Nature are the expres-

sion of the observed uniformities of Nature's working. The fount of inspiration for the man of science is the conviction that Nature is nowhere chaotic, but that she will gradually yield up her secret to the inquiring mind which seeks and finds in Nature the orderliness which characterises reason in its operations. And as investigation proceeds, the validity of this conviction grows more and more apparent. But we ask how this system came to be, and what is the origin of the orderliness of Nature. A law cannot explain itself; it is a bare statement of observed fact. Now science, if she is true science, does not concern herself with this question of origins. It is a problem for metaphysics; it is a very important problem for the Philosophy of Religion. Science assumes that Nature has always been orderly, has always been a system. Let us take, for example, such a statement as this of Huxley: "The whole world, living and not living, is the result of the mutual interaction, according to definite laws, of the powers possessed by the molecules, of which the primitive nebulosity of the universe was composed".[1] We have here a plain confession, that Nature

[1] *Darwiniana*, Essay on "The Genealogy of Animals",

must be assumed to be a system from the very first. The assumption postulates the existence of molecules possessed of certain powers, and endowed with a fixed constitution, which interact according to definite laws; or, to use a phrase of Lotze, the existence of "a series of primary relations between the elements of the universe". If things interact in definite ways, there must be some underlying basis for the interaction. Some ground must exist for the co-ordinated necessities of the world. What science therefore assumes is the existence of certain prearranged activities, or elements, in a related whole. And the ultimate problem is, how to interpret this whole, this unity of multiplicity, which science finds intelligible and amenable to treatment by human reason, so far as she has succeeded in investigating it. Science, as we have already said, does not attempt to explain the original order which she assumes. She treats it as a fact, which has existed from all time. She is right to do so, only she must recognise that her assumption is itself open to criticism, and that reason will still endeavour to penetrate behind her assumption, or rather to analyse it, with a view to discovering if it is an ultimate assumption, or whether it may not itself depend on a further

assumption, and be capable of a different interpretation.

We may neglect the pseudo-science, which endeavours to derive the primitive order of the universe from an earlier state of chaos, if for no other reason, at least for this, that chaos is unthinkable. Whatever it is about which we are thinking, we are compelled to treat it as orderly, as a system of relations. Mind cannot lay hold, so to speak, of anything which is not orderly. If there were such a thing as sheer indefiniteness, as "infinite motion and mixture in infinitely various ways,"[1] it would be nothing for our reason. Reason would be brought up suddenly before it, as a climber before an absolutely smooth wall of rock. The climber cannot climb the rock unless he can find a groove or niche to give him foothold. Chaos, then, is unthinkable. Even if we assume it to be the origin of everything, we have still to ask how out of chaos order can come. What was there in the primitive chaos which led it at one time to become orderly? If you say that there was some element there which ultimately led to chaos becoming cosmos, then it is no longer

[1] Lotze, *Microcosmus*, Eng. Trans., bk. iv., chap. ii.

chaos. It is so far orderly. Nor, if you assert that this universe is only one out of an infinite number of other possible universes which might have been, are you nearer to any rational solution of the problem. For these other hypothetical universes could not have co-existed along with this actual one; and the point is, why this actual one came into being. Whatever originally existed, no matter how complex and manifold, or how simple its original relations might be, must have been actual, and so must have excluded other possibilities from co-existing.[1] Again, every element in your original chaos was not chaotic; but each must have had a definite character, and must therefore have been orderly. A mere possibility is nothing. Only an actual something can have existence. However far you go in your analysis of ultimate conditions you find yourself confronted with orderliness. To postulate chaos as the *fons et origo* of the order that exists is to use language which has no meaning. How, then, are we to explain the fact that, however far back we may push our inquiry, Nature always reveals herself as a system? An explanation is needed, for our minds cannot be

[1] *Microcosmus*, bk. iv., chap. ii.

satisfied with the fact as an ultimate *datum*. Can we find any other explanation than this, that the system of Nature is the expression of an intelligence or mind? Let us consider these points. Nature is intelligible. Our minds can progressively understand her, and we find ourselves at home in the universe. If Nature possesses the quality of intelligibility, must she not herself be the expression of an intelligence? How are we to explain the harmony which exists between our minds and Nature, except on the hypothesis that Nature emanates from mind? Regard Nature as a development, and take note of the end towards which the development has moved. The movement has resulted in the production of personalities, spiritual beings endowed with reason, and possessed of moral worth and significance. Can such beings reasonably be regarded as incidental products of the interaction of mechanical forces? Is it thinkable that blind, unconscious force should result in the production of conscious beings who can turn round and view and interpret the process by which they came into existence? Can consciousness be a by-product of material conditions? Surely the significance of the end must contain the key for the solution of the whole problem.

Mind which emerges in the course of the evolution must have been present at the beginning of it. Once more, analysis of our own conscious existence reveals ourselves as centres of experiences which we call our own. Each one of us is a system of such experiences, which are rendered orderly and systematic just because they are all the experiences of a self. And our rational development consists in this, that we try more and more to group and arrange our experiences, and to render them orderly and intelligible to ourselves. The life of the self is a perpetual movement toward fuller and completer unification and systematisation. We retain our identity through a continually expanding series of changes. Mind is a unifying activity. Now the contention of an idealistic philosophy is, that the only meaning of system, whether in Nature or in man, is to be found in mind. We know of no other unifying principle except mind. Matter in itself is nothing, has no existence, except in so far as it exists for, and is interpreted by, mind. Your atom is a mental hypothesis. The interacting molecules with which science starts are all mental constructions, even though they may at the same time be real, in the sense of not being merely ideas. We are not denying

that matter has a real existence; but we must maintain that, apart from a mind to which it is related, and by which it is grasped, matter is nothing. A self-existent matter is unthinkable and meaningless. Can we then, we ask once more, rest satisfied with any explanation of order, other than that which regards it as the expression of an intelligence?

The problem of the origin of the orderly evolution of the universe is often stated in the following terms. Men, recognising that every event must have a cause, follow in imagination the steps of the evolution backwards, and ask whether there must not have been a First Cause. Can we think an infinite regress, or attach any intelligible meaning to such a conception? Must we not come to a halt somewhere, and find a starting-point for the whole development? The doctrine of creation, as popularly held, undoubtedly includes the belief that the universe began to be at a certain point in time, and that, before that point, the matter of which it is composed did not exist. But, though we who live in the time-process must think of the present development of the universe as beginning at a definite moment, there is no reason why we should not regard creation as an

unending and unbeginning process, and think of God as eternally creating a succession of universes. Provided we postulate a cause adequate to produce an infinite phenomenal succession, we may believe in the existence of an infinite regress. Let us, however, assume that there was a starting-point of the whole movement. What we have to make clear is that we cannot, in that case, speak in strict language of a First Cause. First implies first in a series. Now, whatever God is, He cannot be first in any series. He cannot be any term at all in the series, but must stand, as it were, outside the series. If we call God a First Cause we are really degrading Him from His position of being the ground or underlying basis of the whole series, and are making Him a stage only in the series. We should use another form of expression in order to describe His relation to the historic process of development. Metaphysics might call God by the somewhat ugly name of the "world-ground," or the underlying "significant idea" which gives unity to the whole, or the "supreme spiritual principle". The Philosophy of Religion rises higher, and describes Him as the great Personal Existence, upon whom depends, and from whom emanates, the

whole temporal evolution. The difficulty connected with the expression "First Cause" raises ultimately the problem of the manner in which God stands related to the universe, a problem which is for us insoluble. But though the problem is finally insoluble, yet of the attempts which we make to solve it some can be seen to be less adequate than others. For example, we must not, as we shall see more fully later, think of God as an external designer, a mode of expression which appears to imply that God stands outside a material which is foreign to Him, and works it up into shape. In God we seem to demand a simultaneity of purpose and execution. To call Him a designer is a somewhat crude form of expression. Nor is our religious consciousness satisfied by speaking of God as an immanent idea. The difficulty of thinking of God as apart from or outside matter is sometimes said to be avoided by thinking of God and matter as somehow one, and blended into a unity. Matter is regarded as somehow mixed with mind, the two being constituents of a something which is both of them, and which expresses itself in the evolution of the universe. But what alone satisfies our religious consciousness is some conception of God which shall

make Him that upon which the evolution of the world depends; that which alone has self-existence; which has spontaneity of action; that which has moral worth and possesses an intelligence really akin to our own. The only satisfactory expression which can cover all these conditions is the word Person. It is for the Philosophy of Religion to vindicate its right to use the word "Person" of God.

(*b*) We go on to consider the problem of direction, the question why the development of this planet has resulted in the serial order which we observe, in which there has been a succession of organic forms culminating in the appearance of man. Let us revert to that phrase of Huxley already quoted: "The whole world, living and not living, is the result of the mutual interaction, according to definite laws, of the powers possessed by the molecules, of which the primitive nebulosity of the universe was composed".

We are thinking of molecules interacting. The universe is regarded as a system of interconnected molecules and the problem of its evolution is a problem in molecular physics. Fixing our attention upon one point in the development which may serve as typical of the

whole, the growth, let us say, of an acorn into an oak, what we want to know is why the acorn develops into an oak. Why does it not turn into an elm or a fir-tree? If we say that the acorn has inherited certain tendencies from its ancestor oak, which compel it to grow oakwards rather than in any other direction, we are simply restating the fact and have explained nothing. The problem is, why the myriad molecules which compose the acorn move along the paths, each molecule along its own appropriate path, which lead to the formation of an oak-tree in our garden. In other words, What is it which directs molecular motion? It would be an extraordinary phenomenon for our thought to puzzle over, if there were only one acorn in the whole world growing into an oak. We should have here just that intricate adjustment of parts to form a whole, that co-ordination of movements toward the production of a result, which we could not help raising to the dignity of an end, and treating as in some way foreseen; but the marvel is rendered all the more extraordinary when we think of successive generations of oaks, when we reflect what heredity and the repetition of the phenomenon imply. Here molecular motion is determined in a definite direction, not

once but many times. We ask with all the more urgency how an acorn can gradually put on a structure which looks as if it had been designed. This is a fundamental question for a philosophy which would interpret a development or indeed any change whatever. Wherever we are dealing with any physical change, the motion of any single particle of matter, we ask what it is which makes that particle move in the direction in which it does move. One cannot ask a more fundamental question. Indeed, so fundamental is it that we are obliged to confess that we cannot answer it. We have to admit that we do not know what controls molecular motion. On the other hand, a little reflection shows us that certain explanations of the difficulty which are offered us are no explanations at all. We are sometimes told, for example, that force determines molecular motion. This would seem to be the view of Huxley when he writes that the universe has resulted from the interaction of the powers possessed by the original molecules. But is this a satisfactory explanation? A force acting on a molecule would certainly move it, but the point is, why the molecule moves in a particular direction. The force must itself have been determined in a particular way if it

could cause the molecule to move in one direction rather than in another. As Croll brings out very clearly in *The Basis of Evolution*, motion is one thing, the determination of motion is another. The illustration which he gives is as follows: Let A and B be two particles at a distance from each other, A being to the east of B. Let them move toward each other under the force of mutual attraction. B will move eastward and A westward. The motion of each particle is due to attraction, but not the determination of the motion. A moves west, because B happens to be to the west of it, and the direction of A's motion is due to whatever causes they were which placed B on the west of A. "The direction taken by moving particles is due to pre-arrangement of those particles in regard to time and space. A difference in pre-arrangement would necessarily produce a corresponding difference in the direction taken by the particles."[1]

Force, therefore, can never be the explanation of plan or order. Order results from the determination or directing of force. Now in the organic world, not to speak of the inorganic,

[1] Croll, *The Basis of Evolution*, p. 20.

there is everywhere definite plan. Things develop, as we say, according to type. But no one can say what it is which makes the molecules of a growing organism take severally their appropriate directions, so that there results a structure which presents the appearance of having been designed after a definite pattern. We must not allow ourselves to be deceived by such high-sounding phrases as "formative forces" or "forces of building and construction". Science knows nothing whatever about the ultimate causes of the determination of force and motion. All that science can do, even if she is aware of the difference between the cause of motion and the cause of the determination of motion, is to assume a certain definite, original constitution of matter, a certain precise arrangement of all the primitive particles in relation to each other from which has developed the whole order of the universe. And this assumption itself needs explanation. We still seek for the cause of the original arrangement.

An analysis of our own inner experience may, I think, give us a clue to the solution of the difficulty. That analysis reveals the existence in each of us of a power of will, a power of determining our line of action. Whatever diffi-

culties there may be in the way of proving that the will is free (and strict proof is impossible), our conviction upon the matter is certain. We appear to possess this power of choice and self-determination. Consciousness testifies to it. Morality demands it, for you cannot satisfactorily explain the existence of the "ought" in ethics without assuming the responsibility, and therefore the freedom, of the agent. And ultimately our conception of force or efficiency is derived from our own power of will, from our sense of exercising effort, and from the experience of pressure or resistance with which we meet when we come into contact with material objects. In this way, our own natures supply us with the key for the interpretation of the world around us. And we do from our power of will receive a real suggestion as to the meaning of determination. It becomes natural for us to refer the determining agency in Nature to the power of a Divine will, even though we cannot see far enough into the mystery of existence to justify completely to reason the conclusion which we frame.

We may, perhaps, be permitted here to make a momentary digression, which, however, is not without direct bearing upon the problem under

consideration. The difficulty connected with the freedom of the will turns ultimately upon the nature of causation. The causes which we know in the physical universe, and with which science deals, are all of them also effects of conditions antecedent to them; and reading backwards the process of physical causation we find ourselves confronted with an infinite regress, an endless chain of cause and effect. If the will is free, it would seem that we have here a cause which cannot be regarded as an effect of anything antecedent (except in so far as man's freedom is ultimately derived from God); a cause which does not stand as a link in a chain, but is really spontaneous in its operation. Yet, if we assert this, we at once plunge ourselves into grave difficulties. If I am absolutely free at any minute to choose between two alternatives, if there is nothing to bias me in either direction, and my choice is completely indifferent, then my action cannot be called moral. For that action alone can have moral judgment passed upon it which is the outcome of character, which is action expressive of the nature and constitution of the self. On the other hand, if we say that a man's choice is the expression of his character, then his choice would seem to

be qualified and determined by his inner states at the moment when he makes the choice. These inner states must be held to depend on earlier states, and so the cause (the choice) is reduced to an effect of antecedent conditions. We may once more follow Croll,[1] and put the matter in this way. I chose A half an hour ago, but now, when the same two alternatives are presented to me, I choose B. Why has my choice changed? If there has been a change in the antecedents, that is, in the inner states which determine my choice, then my altered choice depends on this earlier change of antecedents, and must be represented as an effect of prior conditions. If I maintain that there has been no change in my inner states, but that I choose freely, and with complete indifference, then a change has been brought about without a cause, and we seem to be contradicting the truth that for every event there must be a cause adequate to produce it. The event in this case is the alteration of my choice, and of this there seems to be no explanation. Yet the fact remains, that we are convinced we are free, and have the power of spontaneous self-determination. The

[1] *The Basis of Evolution*, chap. viii.

final problem, then, is this—are there causes in operation which are not themselves effects of earlier causes? Our reason requires us to believe in the existence of, at least, one such cause, God, the eternally self-existent Being whose activity, seen in the operations of the physical universe, flows from His own nature, and is the free expression of it. We cannot pass behind God, or treat Him as effect. Our own causality it may be difficult to explain as a free causality.[1] That it is free we are convinced, yet directly we try to explain it, we find ourselves interpreting it in terms of cause and effect, that is, as a series in which each stage depends on something earlier. Will therefore is the only finally operative and determining power, of which we are aware.

[1] For a fuller discussion of the difficulty and for a suggested solution of it, see bk. iv., chap. iv., "The Problem of Moral Freedom," in Taylor's *Elements of Metaphysics*.

CHAPTER VI

TELEOLOGICAL FACTORS IN EVOLUTION

IN concluding our investigation of Darwinism, we pass on to consider whether there are not teleological factors in the Darwinian theory which compel us to modify our conception of the nature of that theory. The last two chapters have dealt with the problem, whether the presuppositions of Darwinism, or indeed of any interpretation of the universe in terms of physical science, do not ultimately involve a teleological explanation. Our present task is to decide whether there are not actually operative in the evolutionary process, as it goes on to-day, factors which wear a teleological colour. Here, once more, we must insist upon the distinction between Darwinism as its author himself gave it to the world, and the narrower theory of natural selection which forms only a part of the Darwinian scheme. Darwin admitted the existence

of factors other than natural selection as operative in the work of evolution. The neo-Darwinians elevate natural selection to the dignity of being the sole cause governing organic development. The theory of natural selection, as we have seen, professes to explain adaptations, without any reference to a principle of purpose or design. Organism and environment are treated by it as two factors which are externally related to each other, and which interact mechanically. The theory is true to the standpoint of physical science, which is engaged ultimately in determining the quantitative relations of things. The conceptions with which science deals are those of energy, spatial distribution of matter, interaction between particles of matter. All forms of energy are reducible by physical science to modes of motion, and all problems finally resolve themselves for her into problems of molecular physics. She investigates a universe which is construed in terms of molecular motion, a cold, grey world, in which ideas of worth or value and even ideas of qualitative distinction have no place. The sensation of red, for example, as experienced by us is qualitatively distinct from that of green, but the explanation of the fact which science offers is in terms of

the difference in length of the waves of light. This is an explanation which does not touch the qualitative aspect of the sensations, but merely states the material conditions under which the sensations may arise. Obviously, the explanation is incomplete. It is an abstract or partial account of the fact in question, which disregards the quality of the sensation experienced. All the explanations of physical science are abstract. Let us suppose, for instance, that what you want to explain is a man. The science of number will call him one, or will say that he has two hands and two feet. So far as the explanation goes it is true, but it does not tell you much about the man. Physics will describe the man for you in terms of interacting molecules. The man is for the physicist a system of interacting particles of matter. You know more about the man now, but physics has not described your friend. There can be no love or friendship between you and a system of molecules. Biology tells you that the man is alive, an organism which grows and assimilates food. You are learning still more about him and he is becoming more concrete. Again you mount higher, and psychology reminds you that he is a conscious and self-conscious being, possessed

of a mind which is not any system of molecules, which is non-spatial and in which there are no movements either molar or molecular. Ethics, finally, tells you that he can distinguish between right and wrong, knows what duty is, has ideals, is a being of spiritual worth. Is it not clear that, in order fully to explain the man, you need in addition to the lower explanations of mathematics and physics the higher explanations of the other sciences? The lower explanations may be true, but they are abstract and regard the man only from a certain point of view. Bearing this in mind, let us come back to the theory of natural selection, and ask whether, by viewing the two factors of organism and environment as externally related to each other, the upholders of the theory are not leaving out of account certain elements which very materially affect our judgment upon the question of the teleological character of the process of evolution.

Is it fair to treat a living organism as interacting mechanically with its environment, as a passive factor in the process? What does being alive mean, except that the living creature is essentially active, with needs which it seeks to gratify, with an instinct of self-preservation which impels it to strive against its surround-

ings? An organism is sentient, has appetites, has will-power, learns by experience to choose and to avoid; in a word, is not a straw drifting with every current, but a swimmer who can, in part, at any rate, direct his course. All these characteristics belong to living organisms, and all are teleological in nature.[1] It is difficult to maintain that these activities of an organism have nothing to do with determining the direction which its development shall take. Even if they cannot call into being a variation, can they not influence a variation when it occurs, either helping to foster it, or to suppress it? Do they not provide natural selection with some of the materials with which it deals? We cannot leave out of account, in our interpretation of the evolutionary process, the non-material factors which are operative in the world of life. Lamarck was strongly of opinion that the effort or striving of the organism after a certain end influenced its growth toward the more ready attainment of that end. It was the felt need or want, together with the movement initiated and continued by this need, which resulted in the production of a new part or organ. There

[1] See Ward's *Naturalism and Agnosticism*, vol. i., chap. x., where this point is insisted on.

would be a greater flow of blood to the part concerned, from which would follow growth and increase in size. Thus the neck of the giraffe has attained its present dimensions because the animal continued to stretch it in its efforts to reach the topmost twigs. Any advance, won in this way, would be preserved through the influence of heredity, and hence continuous modification is rendered possible. The organism reacts to the stimuli which play upon it from its surroundings. Lamarck's theory, therefore, turns upon the effects of use and disuse of organs. Increased use leads to increased efficiency, while disuse leads to atrophy. Organs which are constantly used for a certain purpose gradually undergo a structural improvement which better fits them for performing the action in question, and through the inheritance of the improvement thus reached there follows continual advance towards more perfect adaptation. Habit created form through the effects of use and disuse and the influence of heredity,—this was Lamarck's belief; and it was in this way, he maintained, that we were to explain the adaptation of organic structures to function. Darwin, as we have seen, also believed in the inherited effects of use and disuse, certainly to some extent, and perhaps

increasingly, as he more and more came to study the fact of variability and its causes. He was ready, that is, to believe that in this way there was some causal relation between the environment and useful variations. But if we admit the existence of this Lamarckian factor, we are admitting an activity on the part of organisms which involves sentiency and often, probably, consciousness. Mind is at work as a factor of the evolutionary process. Difficulties undoubtedly there are in the way of our acceptance of Lamarck's theory. For example, there is the difficulty about the inheritance of acquired characters. There is the difficulty of making the theory cover the case of organisms, such as plants, in which, so far as we are able to judge, there is no conscious striving or volition. The theory would seem to refer only to the higher animals, who can direct their efforts with intelligence. Finally, there are many tissues and organs even among the higher animals, such as the shells of crustacea or tortoises, which cannot have been used in Lamarck's sense, so as to increase the flow of blood to them.[1] Yet even

[1] See Romanes, *Darwin and after Darwin*, vol. i., chap. vii., p. 256, for a criticism of Lamarck.

if we admit these limitations to the application of the theory, there remains surely the fact of sentiency. Wherever you have animal life one would think that there must be some form of sentiency, the presence of desires and appetites and needs, however dimly discerned, and that these must determine in part the reaction of the organism to its environment. In so far as they are operative, the organism cannot be treated as interacting mechanically with its surroundings. We cannot put out of view altogether the nature of the organism. The answer of the supporter of natural selection is, that so soon as organisms become sentient, selection will have reference to this fact of sentiency. What will happen is this: states which bring an organism into harmony with its conditions of life will produce pleasure, states of an opposite nature will produce pain. Animals which found pleasure in what was harmful to life would not survive. Eventually, therefore, states of sentiency as pleasurable or painful will correspond with what is good or bad for species in the struggle for existence.[1] Natural selection still remains the sole controlling factor. But this answer tends to slur over facts

[1] Romanes, *Darwin and after Darwin*, vol. i., chap. x., p. 416.

which for the teleologist are of the utmost importance. What he is concerned to emphasise is the fact that the organism is not passive and cannot be treated as such. An animal having once experienced a pleasure will probably seek to experience it again. It will be led on to search for pleasure, it will feel an interest in seeking to widen the area of its experiences. The mental factor will be operative in the development of its life.[1] It may still be under the rule of natural selection, but in our total estimate of the character and meaning of its development, we shall have to take into account the presence of this mental factor, which can only be called teleological.

Reference must also be made to the theory of sexual selection enunciated by Darwin to account for certain phenomena in organic life which he considered could not be explained by the theory of natural selection. Of this latter theory utility is the keynote. To be preserved, an organ or structure or variation must be useful to its possessor in the struggle for existence. But in Darwin's opinion there were certain organic facts to which the conception

[1] Ward, *Naturalism and Agnosticism*, vol. i., chap. x., pp. 294-9.

of utility could not satisfactorily be applied and for which natural selection was, therefore, powerless to account. The facts in question are those connected with the phenomenon of the beautiful in animal life. The colours of the peacock's tail, for example, would seem to be of no use to the bird in the struggle for life, and yet they have been preserved even though the tail, owing to its size, is a drain upon the general economy of the system. The same difficulty would seem to hold good of the gorgeous plumage of all birds, the utility of which it is hard to discover. To meet this difficulty Darwin suggested the theory that the higher animals, and especially birds, possess some degree of æsthetic taste and are determined in some of their actions by this sense of beauty. Darwin's contention would appear to be supported by a considerable range of fact. Birds, for example, often adorn and decorate their nests with coloured feathers and other bright objects. Romanes instances the very remarkable case of the Baya bird of Asia, "which, after having completed its bottle-shaped and chambered nest, studs it over with small lumps of clay, upon which the cock bird sticks fireflies, apparently for the sole purpose of securing a brilliantly

decorative effect".[1] Again, in mating, birds and other animals exercise a preferential choice, which is apparently directed towards securing the most attractive member of the opposite sex. Only in some such way, said Darwin, can you explain the extraordinary brilliancy of plumage which characterises many male birds in the pairing season, and which recalls the action of the human suitor in donning his best attire when going to visit the lady whose hand he hopes to win. If a strikingly coloured male bird is chosen, then the young of that bird will tend to inherit his superior beauty, and so a continuous advance would be made in the matter of colouring. And what applies to colour applies also to song and to other decorative variations. It is the æsthetic taste of the animals themselves which is thus made responsible for the development of organic beauty. Detailed criticism of the theory must be left to biologists. Suffice it here to say that, though Wallace is an uncompromising opponent of the theory, maintaining that natural selection can explain all the facts, Darwin's last words to science were these : " After having carefully weighed the various ar-

[1] *Darwin and after Darwin*, vol. i., chap. x., p. 381.

guments which have been advanced against the principle of sexual selection I remain firmly convinced of its truth".[1] For the purposes of the present chapter the point is, that if you admit sexual selection as a factor in evolution you are admitting the operation of intelligence or mind.

We have, lastly, to consider the applicability of natural selection to explain the development of certain human faculties. Wallace, who is a stout defender of the all-sufficiency of natural selection in the sub-human sphere, denies, in the last chapter of *Darwinism*, that it can explain the emergence and evolution of certain distinctively human faculties. The faculties in question are those which he calls the mathematical, musical and artistic, and to these he adds the power of forming abstract conceptions and the peculiar faculty of wit or humour. Wallace is asking the question, whether, if natural selection can explain the development of body, it can also explain the development of mind. He denies that it is competent to do so in the case of the faculties just mentioned, because the possession of these faculties can have been of no use to man in the struggle for existence.

[1] Quoted by Romanes in *Darwin and after Darwin*, vol. i., p. 400.

Their great development in civilised as opposed to uncivilised races must be due to the operation of special causes. According to the Darwinian theory, while useful variations are preserved, no creature can be improved beyond the stage which is necessary for its present welfare; while the struggle for existence is a struggle of life and death, natural selection resulting in the survival of the fittest and the elimination of the unfit. Wallace proceeds to argue that the possession of the above faculties has had nothing to do with the preservation of one tribe of uncivilised men in their warfare with another tribe. Further, under the operation of natural selection, a mean of variation is maintained, departures from which are not great, so that there is "a general level of development". But in the case of these special faculties enormous difference of capacity is seen. Only a gifted few are musical or mathematical. Other causes must therefore be at work. There is in man something which cannot be derived from an animal ancestry, "something which we may best refer to as being of a spiritual essence or nature, capable of progressive development under favourable conditions".[1]

[1] *Darwinism*, chap. xv., p. 474.

Now, as we take a general survey of the process of evolution and note the emergence of mind in human beings, who are plainly connected on the physical side with a long line of animal ancestors, the belief is borne in upon us that mind too has been the subject of a gradual and continuous development, and that the mental factor has been operative all down the scale of life. Wherever, that is, you have life, there you have also some form of mind, however lowly and rudimentary. The evolution of the physical series has gone on, concomitantly with the evolution of the spiritual series ; each series developing under its own laws and by its own appropriate methods. Everywhere the spiritual factor has been an operative factor, and the whole process of evolution wears a teleological colour. To interpret it in terms of molecular physics, as a series of mechanical changes, is to do inadequate justice to the facts.

In conclusion, we call attention to two points. Science often assures us that you can assume the existence of intelligent activity only in the case of the higher animals. Romanes, for example, in criticising Lamarck's views, asserts that in most invertebrates and all plants there is no conscious striving or discriminating volition.

Such an assertion appears to be a little hazardous. It is difficult to prove a negative. One must admit that when we attempt to interpret the mental conditions of the lower form of life we are, by the necessities of the case, compelled to construe them in terms of our own mental activity, for we have experience of no other. And, where we fail to detect the marks which characterise intelligent and volitional action as we know it, it is natural to conclude that no mental factor is present. But the idea of continuity in development, which we press to the extreme in the case of the physical series, suggests very forcibly that the spiritual series falls under the same conception. If spiritual or mental agency can be seen to be progressively operative in the more advanced stages of evolution, is it unreasonable to maintain, though it cannot be proved, that the same agency is operative wherever life is found?

The other point, which it is worth while to mention, is this, that the admission of a continuous and gradual development of mind is one which can be accepted by theology with no detriment to the essential tenets of theism or Christianity. In some quarters it is thought that such an admission is tantamount to banishing

from the field all Divine activity. Theologians have often pointed in triumph to the failure of science to bridge the gulf between the inorganic and the organic, or between the unconscious and the conscious. They have argued that the existence of gaps in our interpretation of the process of evolution is proof that special interpositions of Divine activity occurred at the points where the gaps exist. The foolishness of such a procedure is obvious, for if one day the gulfs should be bridged, the theologians are instantly defeated in their contention. An activity is no less Divine because it is continuous. Indeed, a God who, if we may so describe Him, lives in gaps, is not a God who commends Himself to our modern minds. Creation may be continuous as well as occasional. Intermittency of operation is no proof of specially Divine power.

CHAPTER VII

RESTATEMENT OF THE ARGUMENT FROM DESIGN

ALL truths require from time to time to be restated and reinterpreted in order that they may be brought more into harmony with the advance of knowledge, and the argument from design affords no exception to this general rule. Our outlook upon the world has been profoundly modified by the conception of development. It cannot but be that so sovereign an idea as that of evolution should exercise a powerful influence upon all our speculation. Two changes in particular have come over our attitude towards Nature. We regard her, in the first place, no longer as a system of finished products, ready-made and complete, but rather as a process or series of stages, each of which leads up to some other stage. The common distinction between means and ends, which we habitually make, appears at first sight no longer

valid. Every end becomes a means toward the realisation of some ulterior end. We seem unable to rest in any one stage of Nature's process, and characterise that as the end towards the production of which Nature was striving. All adjustments are relative, and the most intricate of Paley's contrivances is but a half-way house to an adaptation yet more complete; and when that is reached it will, in its turn, give place to something better still, something, that is, which more perfectly fits its possessor to adjust his life to his changing surroundings. Can we then speak of the existence of ends at all, or argue to a designing cause of the adaptations which we find in Nature? If we could discover the one ultimate end, the great final purpose, served by the whole development, then perhaps we might legitimately use teleological language. For we should in that case have discovered something to which we could attribute independent worth and significance, and we might not unreasonably regard all the earlier stages of the development as means to that end, and as leading up to its production. But can we claim that we have discovered this final end? Is it not but the merest fragment of the gigantic process which unfolds itself before our gaze? In

the second place, when we consider organic adaptations (and it was from the realm of life that the older design argument drew most of its illustrations), we find that it becomes increasingly difficult to treat organisms as adapted to their environment by some external designer. Living things and their surroundings are no more to be regarded as two independent factors or series which have to be brought into relation with each other by an external power; we view them, rather, as correlated and interdependent existences, whose interaction is governed by the fixed conditions under which the whole march of development proceeds. There is one great process of which organism and environment form two sides. Thus the eye cannot, after the fashion of the older teleologist, be treated as a structure made specially for the purpose of seeing, but must be regarded as something which has gradually arisen by a slow process of modification from earlier and more imperfect structures, through the interaction of the forces of the environment and the forces of the living creature. We ask of any structure or adaptation how it came to be. We are driven back, that is, upon the general conditions under which the evolutionary process goes on, and our search

for design is directed to these general conditions. If we can satisfy ourselves that these need some teleological explanation then we may go on to discuss the problem whether there is design in the subsequent stages of the process. Before we can use the speech of the teleologist we must learn to use the glasses of the evolutionist.[1] We are then face to face with a new situation. Paley's external designer, conceived on the model of a human workman, has vanished, and so has his appeal to individual structures as finished products. Nature's method of producing an adaptation does not, at first sight, seem to require any reference to an intelligent purposive cause; while it appears to be doubtful if we can call any stage in the process of development an end, in view of the fact that all ends are means to something beyond them.

The problem, therefore, which awaits us is to determine in what way we are to restate the argument from design. Let us, first of all, give due weight to the fact that, despite all attacks and all criticism, the common consciousness still regards the total movement of Nature as pur-

[1] See *A New Natural Theology*, by J. Morris, chap. ii., "The Argument of Design," to which I am indebted for some suggestions.

posive. Our attitude is no whit less teleological than it was before. When we try to put our argument into words we may have to alter our presentation of it, but the attitude is still there, and we may confidently assert will always be. It is an attitude, not only natural, but even necessary, to beings whose activities are themselves full of purpose, and whose only key for unlocking the riddle of the universe is to be found in their own constitution. The teleological idea is an ultimate category of thought, or, at any rate, represents what must always remain an ultimate attitude for the majority of men. We cannot look out upon the natural world and not see in it marks of purpose. It is too orderly, too much a home of relationships and adjustments. In particular, the growth of organic structures and the nature of living forms are such that we are compelled to say of them that they look as if they had been designed. Nor must we despise the common consciousness. True it is that universal consent is not necessarily a test of truth: you have to pass behind the consent in order to find out the grounds upon which it is based. But the presence of it should at least caution us to move warily before we abandon as utterly worthless

an argument so old and time-honoured as the argument from design. When stated in strictly logical form the teleological argument may not be able to bear the weight of the conclusions which are drawn from the premisses. But may we not treat it as analogous in some degree to the argument for God's existence which is drawn from the beauty and spiritual significance of the world? There is, for many minds, through their appreciation of the beauty of nature, an intuition, as it were, of the Divine presence. May we not argue, in the same way, that the order and seeming purpose of the natural world constitute an almost irresistible appeal to us to see in them a witness to the operation of the Divine mind? We receive a general impression which is, at any rate, in part, confirmed by the judgments of reason, of a world shot through with purpose; an impression powerful enough to overcome the opposite impression, which certainly might arise if we confined our attention to the apparent maladjustments in the natural order. There are such maladjustments, and they have to be reckoned with, but they do not destroy the force of the total impression which Nature leaves upon our minds. And this impression remains, even though we may not be able to detect the whole

significance of all, or any, of the adaptations which meet our eye. The complete meaning of a picture or a machine is often hidden from us, yet we are satisfied that there is purpose in them.[1] This appeal of the whole comes home to the modern mind with especial power, just because we have learned to think of the world as the scene of a great process which is slowly moving towards its consummation. An outlook and temper of mind have been called into being which reinforce the teleological contention. Modern literature, for example *In Memoriam*, shows distinct traces of the psychological effect which has been produced by a recognition of the vastness and orderly continuity of the world's development. Order and progress, then, in their broader aspects, are the marks in Nature upon which the teleologist to-day places special emphasis. In addition, he gives great prominence to the thought of the end which the evolutionary process has reached. Man, as the crown of the world's development, engages his attention. We distinguish three divisions in the natural world: the inorganic, the organic, and the spiritual, or that realm of moral, intellectual, and religious

[1] See Illingworth, *Personality, Human and Divine*, p. 99.

activity and endowment which is the peculiar mark of man. Of these three divisions the two lower prepare the way for the third and are its indispensable conditions; while within the highest division you find personalities, moral and spiritual beings, who appear to possess a unique worth and value, and who form a social kingdom of personalities which seems to be a worthy end and goal for the long striving of the past. Man, if this view of his existence is tenable, is no accident in a world which is a theatre for the play of blind forces, but represents the purpose towards the realisation of which all the earlier stages of evolution were tending. We are reverting to our original question, whether Nature is everywhere process and nowhere final product, and suggest, that in the creation of human personalities we can not unreasonably discern the goal of the world's development, and so can speak of that development as purposive. We are not asserting that man, as he is, is complete product, for man too is still in the making. But whatever further developments there may be in the future, they will take, we seem naturally compelled to believe, the direction of the perfecting of human personality and social relationships. Mankind will never be persuaded

that personality is a mere temporary by-product of racial living forces. The race is an abstraction. The most concrete and real thing which we know is a person, and our personal worth yields neither to the claims of the Absolute nor of protoplasm. If personality is to have any meaning for us, we are not, and never can be, God, nor can God be we; while to offer us the shadowy abstraction of the race, as a substitute for the individual who feels and knows and hopes, is to void life of all that most makes it worth living.

Restatement of the design argument moves also in another direction. It is, of course, impossible for us to understand the nature and method of the Divine activity. We are ignorant of the relation in which God stands to the material upon which He works. But we have already seen, and shall again see more fully, reason to reject that conception of God which regards Him as an external designer working upon a material outside Himself. Neither the analogy of a machine nor of a work of art satisfies us in our interpretation of the relation of Nature to God. The idea of development, when viewed in its religious bearing, seems to require us to conceive of God as not only continuously work-

ing, but as immanent in His works. Nature developing is God in operation. He does not so much work on a material as in and through it. Thus we think of Nature as a great organism, alive, developing by the inherent power of life within it; not as being simply equivalent to God, for that would involve us in pantheism, but as being the visible expression of an indwelling Divine life, which yet remains unexhausted by the operations of natural forces. The question is, whether we can find any valid experience of our own which will enable us to give a real meaning and content to such a conception. Any attempt to describe the Divine activity must remain utterly inadequate, a seeing through a glass darkly, but it may be possible to find an illustration more satisfactory than that of the machine or work of art. Now, as Illingworth suggests,[1] an analysis of our own personal and self-conscious existence may provide us with the illustration of which we are in search. Such analysis reveals the presence of spirit, immanent in and controlling matter, impressing itself upon the material world, using that world for its own higher ends, making matter a vehicle for the

[1] *Divine Immanence*, pp. 65-73. I wish here to acknowledge my debt to the teaching of this volume.

expression of itself. The life of a person is a continuous life, an organic development, which can be described only as a system of means and ends. Inherently purposive, its growth consists in becoming so increasingly. The stronger and richer the personality the wider is the range of its purposive activities, and the more complete the organisation of its experience, while the more manifest becomes the subordination of minor ends to the great ends which give meaning to the whole development. Have we not here the analogy for which we are seeking? Are we not taking our loftiest conception, that of personality, and applying it to God?[1] Conceive of God as spirit, immanent in and yet transcending matter; purposive in all His activities, where we are only partially so; continuous in His operation; using the world of matter as the instrument by which He achieves His great designs; regulating every single movement of the material universe, the fall of the oak-leaf no less than the fiery rush of the sun; and you have a conception which satisfies, and which alone satisfies, the demands of our intelligence as it sets out to explain the world. It is true

[1] For objections to speaking of God as a Person, see Taylor's *Elements of Metaphysics*, bk. iv., chap. iii.

that, in using language like this, we are trying to sound depths which no human plummet can fathom. We talk of spirit, and we have not explored more than the fringe of the conception ; of personality, and we cannot define the full meaning of the term. But we know that our own spiritual activities are full of purpose, and that for us matter subserves spiritual ends, and so we take the highest conception which we possess and apply it to God. Our hands reach out in the darkness, and something tells us that there is an answering touch.

One or two problems arise here in connection with what has just been said, and it is necessary to deal with them.

(*a*) The first is concerned with the meaning of the word "immanent". What do we mean when we speak of God as immanent in Nature? The primary implication of the term is, I suppose, that we conceive of God as dwelling within His works in opposition to a God who dwells outside them. Whatever God is, we feel that He must be spirit. God must be mind, intelligence, will, and when we speak of Him as immanent we seem to imply that His spirit dwells in and operates through matter. But can spirit be *in* matter? Are we not applying a

spatial metaphor and thinking of God almost as extended spirit occupying space? One box can be within another box because both occupy space, but spirit and mind are non-spatial. Our ignorance of the relation of mind to matter should make us cautious in using the word "immanent" of the connection between God and the material world. But the word may also serve to emphasise God's perpetual causal activity. God cannot worthily be thought of as a Being who once made the world and then withdrew from it, leaving it to itself. Creation must be continuous. God is not remote, but must be conceived as near at hand. The whole universe, with all its movements, is at each moment sustained by God. This is probably the fundamental truth which we try to express by the word "immanence". The spatial idea comes in to baffle us, but what we wish to emphasise is the continuous causal activity. Illingworth,[1] dealing with this problem of the relation of God to the universe, succinctly puts the question in this way. Is the universe to be thought of as God's body or God's work? If we answer that we must think of it as His body, we are confronted by two diffi-

[1] *Divine Immanence*, p. 72.

culties. We are using an illustration which we have borrowed from our own personal existence, but which throws no real light upon the situation, because we are ignorant, in our own case, of the relation which exists between our spirits and our bodies. The two elements, spirit and bodily organism, are given to us as a concrete whole of experience. Subsequent reflection analyses this experience into these two contrasted elements, but remains powerless to render any account of their mode of connection.[1] We must, then, make it perfectly clear to ourselves, that, in speaking of the universe as God's body, we are offering no explanation of the problem, but are merely restating it. The second objection to this mode of expression is, that the term "body" is inadequate to describe the relation in which God stands to human personalities. A body is an instrument, without independence of its own. But finite spirits must possess a relative independence, or they would not be spirits. Spirit implies independence and the power of self-determination. And any theory of Divine immanence must cover the relation of the Divine spirit to human personality. If, on the other

[1] See Taylor's *Elements of Metaphysics*, bk. iv., chap. ii.

hand, we speak of the universe as God's work, even though we find ourselves face to face with all the difficulties which cluster round the idea of creation, we may, perhaps, regard our description as more satisfactory. For a man's work is the expression of his mind and character, is the utterance of his personality ; and, when we assert that we read a spiritual meaning in the world of material things, what we wish to emphasise is, that they are the expression of an intelligence which is revealing itself, through them, to our intelligence. The phrase "God's work" also brings into prominence the thought of the Divine causality, which, as we have seen, underlies the conception of immanence. There is, however, an important difference between the work of God and the works of men. A human being makes a thing and, when he has made it, he has done with it. It stands apart from its maker as a finished product. But God's causal operation is to be thought of as continuous. He makes and sustains, by the same act, the whole frame of the material universe. Finally, in speaking of the universe as God's work, we are using a form of expression which does more justice to the fact of our own spiritual independence. We should then maintain that God was

causally operative everywhere, except at those points in our own lives where He has given us a measure of relative, causal independence. As spiritual beings we are still His work, for we owe our existence to Him, but, in making us free, He has permitted His own causal activity to be traversed by our own. The transcendence of God is a truth, which must be guarded equally with that of His immanence. If we would not lapse into pantheism, we must maintain that God is not exhausted by His works, that they are not a complete expression of His being, but that He possesses, if we may so put it, a reserve of power. He is, then, greater than His works, for He is the originating and sustaining cause of them. Transcendence emphasises also the thought, that God is a spiritual Being, who is to be construed in terms of mind and will. When we have said all, however, we have to confess that the relation of God to the universe is a problem beyond our comprehension. All illustrations or analogies which we may use supply us with but dim adumbrations of the real truth.

(*b*) A second problem, upon which it is necessary to say something, is the problem to which we have already referred, of the existence of

design in every part and corner of the universe. Is every detail in the structure of existence designed? Was the shape of Darwin's nose designed? This question I am inclined to answer in the affirmative, though with certain qualifications. But before giving reasons for this assertion, I would ask my readers to bear in mind the fact that we have not yet examined the validity of the conception of design as applied to God. That examination is made later.[1] In the present chapter the word "design" is used of God's activity, without critical investigation of its applicability.

Now we have already seen that our minds cannot think chaos, and so cannot postulate chaos, or sheer indefiniteness, as the origin from which our orderly universe has developed. Whatever was there in the beginning was orderly; matter was possessed, from the first, of a definite constitution. We have to assume the existence of a system of primary relations and to think of the ground of the universe as a unity of multiplicity, a whole made up of related elements, each of which is what it is, only because of its relation to, and place in, the

[1] In chapter ix.

whole. Lotze[1] makes a shrewd remark to the effect that people, in labouring to prove that there is design in the universe, seem to assume, that what is irrational and without purpose has a better reason to exist ultimately than what is rational and purposive. He asks why, since we are compelled to recognise in reality something final and absolute, we should not suppose that ultimate reality to possess "these predicates of harmony, inner agreement and adjustment of means to ends". So far as the legitimacy of the assumption is involved we have as much right to assume the one as we have to assume the other.

But, if the original conditions were not chaotic, then everything which, in the course of development, emerges as a result of these conditions, must have been predetermined. If we had knowledge enough we could foresee the course which the evolution of the physical universe would take, or, conversely, could trace back any event to the initial conditions out of which it has sprung. This original unity of relationships, which science treats as an eternally existing fact, we have seen reason to interpret in

[1] *Philosophy of Religion*, English trans., edited by F. C. Conybeare, chap. i., sec. 11.

terms of intelligence. Does it not, therefore, follow, that, for that ultimate mind, each stage and every detail of the evolution must be part of the plan, must have its appointed place in the whole scheme, must be, as we say in our human language, "designed". There are, however, difficulties in this contention. For example, as Lotze points out,[1] the word "accidental" has a real meaning in the case of purposive human action. I set out to execute some plan and devise means in order to effect it. Those means issue in results, over and above what are wanted for the carrying out of the end in question. I take, let us suppose, the necessary steps to dig up a bed in my garden. In achieving my end I have also produced a change in the structure of the spade with which I dug. The spade is more worn, by friction, than it was. By bringing up to the surface soil that was before below it, I have also caused certain alterations in the chemical constitution of the soil, and these changes involve an infinite series of other changes, which are so complex that I cannot follow them out. Much, therefore, has happened by the way, which formed no part of my original

[1] *Philosophy of Religion*, chap. i., sec. 8.

plan, and these side-happenings may fairly be called accidental, though, of course, not causeless. Similarly, in the case of a law of Nature, much may occur, which, "though not opposed to the law," can hardly be called a direct result of it. "An accident comes to pass in the connected course of events, but is due to some circumstances which have nothing to do either with the purpose or law in question."[1]

May not God, therefore, have purposed a general end for realisation, and have established certain fixed conditions under which the end is to be reached, but have left a host of details undesigned, details which occur accidentally, as the general tendency is being consummated? Let us assume, for example, that He designed the succession of organic forms, which we see, in its broad outline. Did He design each spot on the tiger's skin, or each mark on the shell of the snail? We cannot answer the question, for we do not know the nature of the Divine intelligence, or the relation in which God stands to the material upon which He works. But it is natural to suggest, that, the more perfect the intelligence may be, the less room will there be for anything

[1] *Philosophy of Religion*, chap. i., sec. 8.

unforeseen. An infinite mind would be aware, surely, of the full results of every action, and for it there would be no meaning in the word "accidental". Its complete insight would take account of every possible contingency. A parallel problem occurs in all the text-books on ethics under the head of the distinction between motive and intention. The man, who acts, frames beforehand, in idea, an end which he wishes to reach, and his motive (what moves him to act) is this end, as foreseen and anticipated. His intention, we are told, is something wider, and includes all the foreseen consequences of the act, both those, for the sake of which, and those, in spite of which, he does the act. The cook who wishes to poison her mistress, and who puts poison in the soup of which the family, as a whole, is to partake, knows that she will probably kill others in addition to her selected victim. But it is not her motive to kill these others; her motive is to kill her mistress. This distinction, however, between motive and intention, is not ultimately valid. For in any given set of circumstances, there must be one, and only one completely right thing to do. The good must be individual and unique, and, for a being who possessed intelligence enough to foresee the total consequences

which would flow from his action, would include both motive and intention. There cannot, ultimately, be any conflict between motive and intention, for the motive is the one complete end of action, with which, as being good or bad, the individual identifies himself in order to reach it.

The chief difficulties in the view, which we have adopted of God's intelligent activity as covering all details, are those which arise when we face the moral problem of the existence of pain and imperfection. The small-pox germ seems to alight indiscriminately on good and bad alike. The stray bullet from the Maxim gun kills, in an instant, the man on whom the hope of the army depends. In all the realms of life there are born organisms which are dwarfed or distorted and untrue to type. Nature appears to fail of her purpose. If life is an end in itself, and worth preserving, then there are many adjustments which are harmful to life. We are confronted with the old problem of reconciling the omnipotence with the benevolence of God. The existing conditions of the universe seem to constitute a sore impeachment upon either His power or His goodness. But, it is to be noted, that we are here introducing considerations of

a moral kind, and, consequently, the whole question demands a wider treatment. Many have thought that the problem of pain is rendered easier of solution if you do not regard every detail of the world as designed, but admit the existence of a contingent element. God, on this view, would be working out a general plan, under fixed conditions. In the realisation of that plan many things might happen by the way which were no part of the plan, though they were included within the scope of the general conditions, such as earthquakes or volcanic eruptions, or the unequal incidence of disease. Can our moral sense maintain that God designs all these things, and deliberately causes the cancer and the pestilence? Certainly we cannot hold that moral evil is designed, though the possibility of it must have been allowed for by God. Nor can a strict doctrine of predetermination hold, I think, of those regions in which man's free will is operative. But the solution of the problem is beyond us, whatever view we elect to take of the difficulty.

On the other hand, if we leave out of account the moral aspect of the question our difficulties are greatly lessened. They arise from our inability, as finite beings, to conceive of an in-

telligence which is possessed of the complete insight which we, confessedly, lack. Meanwhile, let us fix our attention upon our experience of ourselves as conscious, intelligent beings. Is it not our ideal to make every single act and detail of our lives the deliberate expression of our purposive activity? We do not succeed in this. We cannot always live at the high levels of intense spiritual concentration, and not everything that we do is the expression of our total personality. Yet, even with these limitations, life does more and more take shape as an ordered and systematic whole. If we were not so limited, we should increasingly throw our whole being into every single act which we perform, and every detail would glow with full spiritual purpose. Is it inconceivable that God may be so able to act, and that, for Him, the meaning of the whole may be expressed, at each moment, in every part of it? Must we not, indeed, think of His mind as grasping completely the entire scheme of reality in its immense complexity; seeing each detail in its clear relation to the whole; and meaning that each detail shall express a definite purpose and shall contribute its *quota* to the purpose of the total scheme?

(*c*) The last point upon which I would touch, is the significance of the conception of worth or value in the argument from design. The importance of the conception, in this connection, is abundantly clear. An element in the teleological idea is found, on analysis, to be a recognition that the end reached is one which it was worth while to reach, either as being complete in itself, or as a means to some ulterior end. If we take human action as that which affords us our best illustration of what teleological activity means, we find that a purposive act, on the part of a human being, includes the following elements:[1] (*a*) the reaching of a result after deliberation and the adoption of the appropriate means; (*b*) the foreseeing of the result by the actor, so that it is raised from a mere result to the dignity of an end; (*c*) the recognition that there is value or worth in the result. The thing was worth doing, and the knowledge that it was so was an important contributing factor of the process which brought it about. The conception of end always involves the idea of worth or value. Judgments of value form an integral part of our experience. Now, as we look out

[1] See Hobhouse, *The Theory of Knowledge*, p. 582.

upon the world, we certainly judge some things in it to have worth or value, and that for themselves, independently of the fact that they may also have value, as being means to further ends. A person has such worth, and a moral act. Beauty, again, would seem to be an end in itself, and also life. For, as we shall see,[1] it is one of the characteristics of organisms, that we judge them to be self-contained wholes whose life is complete in itself at every phase and moment of it. Wherever you have life there you seem to have a series of continuous affirmations, on the part of the living creature, that its life is complete at each moment. At each stage of its being it comes before you as a self-contained system whose existence is, if we may so put it, worth while. A living organism can never be treated as a mere means to something else. Extending this conception to the universe as a whole, it is open to us to think of it as a great organism unfolding itself to fuller and fuller life, each step in whose development is an end in itself. Browning has magnificently expressed this point of view in *Paracelsus* :—

[1] *The Theory of Knowledge*, chap. viii.

I knew, I felt . . . what God is, what we are,
What life is—how God tastes an infinite joy
In infinite ways—one everlasting bliss,
From whom all being emanates, all power
Proceeds; in whom is life for evermore,
Yet whom existence in its lowest form
Includes; where dwells enjoyment, there is he.

And then the poet goes on to illustrate from Nature's life the joy of God:—

Afar the ocean sleeps; white fishing gulls
Flit where the strand is purple with its tribe
Of nested limpets: savage creatures seek
Their loves in wood and plain—and God renews
His ancient rapture. Thus he dwells in all,
From life's minute beginnings, up at last
To man—the consummation of this scheme
Of being.

This is the poet's vision, but it is not given to us all to see it. When he says, "Where dwells enjoyment, there is he," we at once ask how the vision is to be reconciled with the fact of pain. Discords make a harmony. If God hears the harmony, are we left to hear only the discords? Once again, the problem of pain and moral evil baffles us, and it can never be more than an act of faith which makes us interpret the world as the movement of a great life, which, at every moment, is complete in itself and good. But

we have good reason for referring to this view of ultimate reality, born, I will not say, of an optimism which has never faced, but of an optimism which puts aside, the darker facts of existence, and forgets the shadow in the joy of the sunlight, because it calls on us to modify that conception of evolution which would make each step in development simply a means to a remoter end. The distinction between means and ends breaks down when we apply it to the life of an organism, or of a moral personality. It is the end of the living creature at each moment to maintain itself, just as it is the end of a human being to make his every action the expression of his complete individuality. We must, therefore, when we ask if there is design in the whole or the parts, keep in mind the judgments of value, which form so large a portion of our mental furniture. The validity of these judgments becomes more apparent just in proportion as we mount the scale of being, and they receive their completest justification when they are applied to man. And, because we find indications of value in the later stages of the evolution, it is natural that we should also regard all the lower forms of existence as possessed of an inherent worth. The qualities which char-

acterise reality at one point must, we think, characterise it throughout, though, for our understanding, they may be more apparent in the higher grades of being. We might then state Darwin's question about the designed character of his nose in another form. We might ask whether there are not degrees of worth in the total scheme of existence; whether some parts of reality do not more completely express the true nature of reality than other parts. The conception of worth would apply to the whole of existence and the infinite mind would grasp every detail, however minute, in its relation to the total system, but at some points in that total system the meaning of the whole would flash out with intenser brilliance; just as our own action, in a moral crisis, is a truer revelation of ourselves as spiritual beings than our action in eating our breakfast or dressing for dinner. The conception of degrees of reality[1] and degrees of value throws much light upon some of the teleological problems which we have been discussing.

[1] See Taylor's *Elements of Metaphysics*, bk. ii., chap. iii.

CHAPTER VIII

ORGANISM AND MECHANISM

IN the present chapter we shall investigate the nature of organisms and discuss by what categories of thought we may best interpret them. Such an inquiry is clearly part of the more general problem dealt with by this volume. The meaning of development is to be found only if we include in our purview the world of life, while the nature of an organism has, as a matter of history, been one of the most fruitful fields of research for those interested in the study of final causes. The two conceptions of purpose and development seem to meet in the interpretation of the nature of living things. Our subject naturally falls into three divisions. We shall begin by examining the differences which appear to mark off the living from the non-living world. Next, we shall examine the claim of physical science to extend mechanical

principles of explanation so as to include organisms. Lastly, we shall consider some of the special problems which organisms raise for the teleologist.

That there are essential differences between the organic and the inorganic is the verdict of the profoundest thought as well as of ordinary experience. It would not be difficult for any one to enumerate some few points in which a living being differs from a stone or a machine; yet, to grasp the full significance of these differences, or to explain in any way the mystery of life, is beyond the power of the acutest observer. Life, so far, at any rate, has steadily refused to yield up her secret. Four main characteristics appear to mark off organisms from inorganic substances—the power of movement; the power of assimilating food; the capacity for growth, under which we may include reproduction of kind; and the nature of their unity. We will deal shortly with each of these in turn.

(*a*) Organisms, both plants and animals, possess the power of self-movement. The organic world can originate, the inorganic world can only transmit, change. This spontaneity of movement is not, however, altogether independent of external influences. In the great majority

of cases, perhaps in all, it is conditioned by physical forces which act directly or indirectly upon the organism. But, even where it is so conditioned, there would seem to be in the organism a peculiar power of response to external stimulation, which cannot be explained solely in terms of the interaction of physical forces. There are many movements on the part of organisms which cannot be traced to the influence of any direct external stimulus. The most minute investigation has failed to reveal the presence of such stimulus. These movements are probably due to internal changes in the organism by which potential energy is liberated,[1] protoplasm being a highly unstable compound. Only in this way, for example, can we explain the movements of the amœba, which, indeed, derives its name from the changes which characterise its life and lead to perpetual alterations of its form. Again, if we mount higher up the scale of life, and fix our attention upon organisms which possess a central nervous system, we find it increasingly impossible to explain all the movements of such organisms as reflex.

[1] Biology calls such movements "automatic," in contrast with those which are due to the presence of some external stimulus.

"There may be a discharge of the energy accumulated in the central ganglia without any excitation whatever of an afferent nerve."[1]

Indirectly such spontaneous movement is conditioned by external stimuli, for the continuance of life depends upon the taking in of supplies of food, and this intake alters the equilibrium of the forces in the body and involves perpetual readjustment. But, even so, no law of equivalence between external stimulus and internal change can be established. The movement of an inorganic body is in proportion to the force impressed, but, when a stimulus is applied to living matter, the energy produced is often entirely out of proportion to the stimulus. The whole transaction proceeds on a plane higher than that with which physical science is familiar. For the organism appears to have its own peculiar manner of reacting to external stimuli when such are present. It "reacts as an individual, not as a substance". Its response is organic, and not merely physical. In other words it responds as a living being, and into all its reactions its individuality enters. We might illustrate this point in many ways, but

[1] Höffding, *Outlines of Psychology*, English trans., chap. vii., sec. 3.

it will be enough if we refer to the power, possessed by all organisms, even by the single cell, of selecting and rejecting food.[1] Let us take, for example, the epithelial cells, which line the intestinal wall. Each of these cells is a complex organism which assimilates food by sending out protoplasmic processes, grasping the particles of fat, but infallibly rejecting poisons. Or take the case of the amœba, *Vampyrella Spirogyræ*. This is a minute red-tinged cell, apparently structureless, which will feed only upon one kind of algæ and refuses all others. Of *Colpodella pugnax* one observer writes: "The behaviour of these monads, in their search after food and in their method of absorbing it, is so remarkable, that one can hardly avoid the conclusion that the acts are those of conscious beings".[2] What these instances serve to show is this, that, while the presence of food stimulates the cells to movement, it evokes a response of an order so highly complicated that it cannot be explained in mechanical terms alone.

[1] The following illustrations are taken from the chapter entitled "Vitalism and Mechanism" in Bunge's *Textbook of Physiological and Pathological Chemistry*.

[2] Cienkowski, quoted by Bunge.

(*b*) The power of assimilating food, to which we have just referred, may, perhaps, be regarded as the most fundamental organic process, for, without the presence of a constant supply of food, life would quickly come to an end. There is, however, nothing whatever in the inorganic world parallel to this power possessed by organisms, by which plants build up the inorganic elements in the air and the earth into organic tissue, and animals convert into new and appropriate forms the organic substances which they assimilate. We witness here the phenomenon of an organism building itself up by means of a material which it in part creates, and giving new expression to the energy which it takes in with the food it eats. Upon this power of assimilation depends the possibility of the growth or development of the organism. And growth implies, not only increase in bulk, but also the emergence of qualitative differences. On the occurrence of any chemical change in the organism there are brought into play new forces which were not before operative.[1]

Increase is the key-note of growth, but the increase is not to be interpreted merely as the

[1] See Lotze, *Microcosmus*, bk. i., chap. iv.

addition of units to an already existing bulk or mass, but as a qualitative increase which gives the organism an intensified individuality. Every organism, therefore, must be thought of as a self-maintaining whole, which uses what it assimilates for its own purposes of the nurture and repair of the body, and which grows according to type. Professor Ward has recently[1] emphasised the importance of this characteristic of self-maintenance. In the inorganic world there exists, as he points out, a constant tendency towards physical quiescence and equilibrium. Energy, while the total amount of it remains the same, is continually passing into forms which are no longer available for work, and science bids us look forward to a day when the clock of the solar system will have run down and stopped, and this planet will have lost all its heat, and become a stone-cold mass revolving in a dark heaven. But in the organic realm the very reverse of this obtains. There you have organisms constantly engaged in storing up energy which shall be available for future use, growing in complexity and differentiation of structure and manifesting an increasing activity. They wage war against

[1] *Naturalism and Agnosticism*, vol. i., chap. x., p. 285.

the destructive forces of their environment, repair their bodily waste, fight against disintegration, and in every way seek to counteract the tendency which prevails in the inorganic world. They are, in other words, organised systems, whose organisation is maintained and perpetuated through change; whereas organised systems in the inorganic sphere are always undergoing disintegration of their organisation. There would seem, therefore, to be some vital energy or power of a stable and constant character, which controls and directs the molecular changes going on within the body of the organism, and which enables it to maintain itself. While energy itself, as Ward says,[1] is directionless, "life consists in guidance and control of known forms of energy, molar and molecular". And, when life ceases, there is no energy, equivalent in amount, to take its place.[2] The life of the organism is not, however, entirely independent of the system of physical forces. On the contrary, it is everywhere conditioned by them, and they operate within its material organisation. Thus, for example, food could not be assimilated unless heat and moisture were

[1] *Naturalism and Agnosticism*, vol. i., chap. x., p. 290.
[2] *Ibid.*

present in the body, and when energy is stored up by such assimilation the law of the conservation of energy operates. But over and above this working of the physical forces there would seem to be present another factor, something which is not on the level of a physical force at all, something which in older days used to be called a vital force, but which we should not, I think, so name to-day. How we are to conceive of this something, and what picture of its operation we can form in our minds, is just the problem that still awaits solution.

(*c*) Under the head of growth we may include reproduction of kind, for the life of the parent organism is extended, as it were, in the life of its offspring. The new organism is formed by the growth of a portion of the parent organism, which in due course acquires an individual and independent existence. The inorganic world can show nothing which resembles the power of reproduction; nor has any attempt to derive life from the inorganic ever succeeded. It is an accepted principle of biology to-day that all life comes only from already existing life. We need not, however, jump to the conclusion that there was not once a time when the organic was

derived from the inorganic. The life, which we know to-day, even in its lowliest form, is a life which has been exposed to centuries of change. A long process of adaptation to environment has been going on which must have altered the character and quality of living activities. Life was, possibly, a simpler thing originally, and it may have arisen from the inorganic without any special interposition of Divine creative activity. If we are impressed by the grandeur of the conception of absolute continuity in development, we may prefer to lean towards the belief that there has been, in fact, no break between the two series. And this belief will be strengthened by deeper reflection upon the nature of the Divine activity, so far as finite human reason can form any conception of the operations of God. We cannot, however, now reproduce the conditions under which the transition from the inorganic to the organic took place.

If the inorganic world contains nothing which is strictly parallel to reproduction of kind, neither can it show anything which is comparable to growth in its larger meaning. We are sometimes told, that, in the formation of a crystal, we have a process which resembles the growth of the living organism, and it may be well briefly

to examine the validity of the statement. The organisation of a crystal is very complex, and we are told that each crystal possesses a marked individuality of its own which distinguishes it from every other crystal, just as every living organism is a unique individual. The difference between the crystal and the organism is, we are asked to believe, not one of kind, but one of degree. The organisation of the latter is more delicate and complex, but both are to be explained on the same terms and by the same principles. But can this contention be made good in face of the striking dissimilarities between the two which confront us? A crystal increases in size by a process of accretion of new material from without. If the conditions which facilitate this quantitative increase are removed the crystal no longer increases in bulk, but, the moment they are restored again, the process of enlargement commences anew. But the organism grows by a process of taking food within and assimilating it, and the assimilation changes the character of the material which is absorbed. A crystal can be broken up into fragments and can be restored by a repetition of the process which originated it, but an organism cannot be so restored. Only to a limited

extent can organisms repair their own damages, and the more complex and highly developed the organism the less is the power of repair which it possesses. From a dissected portion of a water-hydra a new water-hydra will spring into being, and a lizard can repair its lost tail, but a dog's leg will not grow again, nor the hand of a man. Once more, while there is an organisation both of inorganic and of living matter, the living organism, as we have said, appears to possess some principle of control which preserves its organisation in face of the disruptive influences of the environment, but such principle is wanting in inorganic matter. The crystal, in other words, is a resultant or aggregate, but the living organism is a self-producing whole. We do not regard it simply as acted on by things outside it, and as reacting mechanically to external forces, but we view it as organising itself, and so reacting as a self-conserving system. The phenomenon being unique, we have no language adequate to explain it. The difference between the crystal and the organism is one which we can appreciate rather than describe. We find ourselves at a new point of view when we set out to interpret organic life. The principles of mechanical explanation fail us. They

only partially explain the nature of organisms. We need categories which are richer and fuller.[1]

(*d*) The unity of the organism is the last characteristic which demands our attention. What do we mean when we speak of every living thing as a unity? A machine possesses a unity of its own; it is one machine, made for, and serving, one end. A stone, also, is a unity. How do the stone and the machine differ, as regards their oneness, from an organism? In attempting to answer this question we note two features as characteristic of the unity of an organism. The first we have already alluded to in speaking of the power which an organism has of preserving its individuality through a succession of changes. Every living thing is a self-organising system. It adapts itself to altering circumstances, it reacts upon its environment, and through differences keeps its identity. But, secondly, in an organism the relation of the parts to each other and to the whole is something peculiarly close and intimate. A machine is a whole of parts, but you can

[1] For a fuller discussion of the differences between a crystal and an organism, see *A New Natural Theology* by J. Morris, chap. v., sec. 1.

detach a bolt or a wheel, and they remain bolt and wheel, though it is true, that, for the time being, their function is gone. But if you detach a hand from the body it dies. In a living being, again, the parts are outgrowths of the whole, and yet, in their turn, minister to the life of the whole. The leaves of a tree, to use Kant's illustration,[1] are products of the vital activity of the tree, yet help to nourish the tree, and, by repeated stripping of the leaves, you kill the tree. We cannot think of the parts of any organism independently of the whole, while the whole, again, is just the whole of the parts, a unity, which is expressed in and through the differences. The whole may be said to be in each part, just as each part is in the whole; and all the parts have to be conceived as adapting themselves one to another and to their surroundings, so as to form a self-conserving system. In a machine, on the contrary, we tend rather to think of the parts, as standing in an external relation to each other, which has been imposed upon them from without by the maker of the machine. Any alteration in the machine is made from outside, whereas changes

[1] *Critique of Judgment*, trans. by J. H. Bernard, part ii., sec. 64.

in an organism take place by a process of internal transformation in which the life of the whole organism is involved; though the occasion of the transformation may be the presence of some stimulus derived from without, from the material world which surrounds the organism.

Certain qualifying considerations must, however, be noticed; for the unity of organisms appears to be a matter of degree. In the first place, a relative independence must be allowed to certain groups of cells in the body. Broadly stated, it is true, that, if "one member suffer all the members suffer with it," yet damage to a finger-nail or to the hair of one's head, does not necessarily affect vitally the life of the whole organism, and the hair of the head may be cut off and still retain for long periods its characteristic qualities. Secondly, it is difficult, in the case of some organisms, to determine what you mean by their individuality. For example, in what are known as colonies, or colonial forms, you have various cells, which, though aggregated together, really lead an almost independent life and perform independent functions. In *Siphonophora*, for instance, one of the *Hydromedusæ*, there is a common stem from which grow out various cells, a digestive cell, a cell for attack,

one for defence, a reproductive cell, which last, in course of time, becomes detached and gives rise to a new compound or colonial form.

Is the individuality here to be attributed to the whole colony or to the single cell? What, again, of the individuality of the water-hydra, each fragment of which when artificially dissevered will reproduce a new and complete organism, and which gives birth to another specimen by the simple process of putting out a bud which ultimately separates itself from the parental body? Morphologically regarded, the cell is the unit, and multicellular organisms are treated by science as aggregates of such units. Aggregates they are, it is true, but they are also more, at least in the case of the more highly developed organisms. The conception of an aggregate is inadequate to do justice to the unity and individuality of a dog or a human being, even when regarded only from the standpoint of their bodily existence. More plainly inadequate is the conception when the factor of mind and self-consciousness is taken into consideration. The self-consciousness of man represents the highest type of unity and individuality of which we have any experience. If we analyse our personality, we find that we are conscious of

ourselves as maintaining our identity through difference and change. We change and yet know ourselves to be the same. There is that intrinsic relation of whole and parts which we found to be characteristic of organic life. We take our own nature, I suppose, and use it as the key to explain the world outside us. We are aware of our own individuality and find in ourselves this intrinsic relation of whole and part. It confronts us in organisms, and is characteristic even of the single cell, for living things refuse to be explained mechanically. But we are puzzled by finding that the unity and individuality of organisms are not everywhere equally apparent. In Nature's scheme the individual comes gradually, and the higher you mount up the scale of life the more marked does the individuality of organisms become, whether you apply a physical or a mental criterion.

We pass on now to consider the attempt which science makes to explain organisms mechanically. Her ideal is to reduce the organic to the level of the inorganic, to make biology a matter of chemistry and physics. The organism is treated as being only a specially complicated case of mechanism which is to be interpreted in terms

of physical causation by the use of the categories of efficient cause and reciprocity. Physical science abstracts from the point of view of life; it levels down and claims that what explains the lower or inorganic is competent to explain also the higher or organic. The unity of the organism, as we have seen, science treats as a case of aggregation. The living thing is conceived as an aggregate. Its parts are regarded as standing in an external relation to each other, and as forming a group of independent units which happen to be combined in a whole. Life, for the physicist, differs from the inorganic, not in virtue of the presence of any particular or special force, but solely because of a peculiar mode of connection between the parts of the organism.[1] The connection is more intricate and complex than in a machine. But the whole life of the organism is under the control of the same general laws which operate in the inorganic sphere, and these laws are held to be sufficient to explain all which seems most characteristic of living things. If we could understand completely the connection of parts in an organism we should see that mechanical principles would

[1] See Lotze, *Microcosmus*, bk. i., chap. iii.

explain its life. We fall back on the view that special categories are needed only because the great complexity of organic existence baffles our attempts at mechanical interpretation. Growth, again, it is urged, might be mechanically explained if we knew the original arrangements of the particles of the germ from which the organism develops.[1] If we could see these in their interconnection we should then understand how all the interactions with external influences from which growth results were controlled by this original constitution of the germ. No special force or power need be invoked, but the whole process would be explicable in terms of the known forces in combination with an original arrangement of material particles. The substances which the growing organism takes into its system retain their own properties and forces. What happens is, that these forces are brought into connection with the existing forces of the bodily system of the organism, and fresh interactions and combinations result. The body grows in bulk and acquires new powers of acting upon the external world. Nothing more is needed to explain the growth of the organism

[1] *Cf.* Lotze, *Microcosmus*, bk i., chap. iii., § 3, from which I have borrowed this mechanical explanation of growth.

if you assume that the original particles of the germ are associated together strongly enough to resist disintegration, and to allow of the self-conservation of the growing being. Repair of injuries may be explained on similar lines, so physical science urges, and also reproduction of kind. In all cases the problem is simply one of understanding the connection between the parts of the organism.[1] The central point of the whole mechanical method of explanation is to be found in the thought of each organism being only a very specially complicated machine, whose interconnections are closer and more subtle than any with which we meet in the inorganic realm.

Now the demand that life shall be treated mechanically is strengthened in two ways. In the first place, science has already made no small advance along the road of mechanical explanation. She has shown that physical and chemical methods of interpretation do hold, at least in part, in regard to many vital phenomena,

[1] The repair of an injury involves an elaborate division of labour between the cells engaged in the work of repair. It is difficult to picture any mechanical explanation of the fact that thousands of cells each contribute their own share of labour in harmonious co-operation. We cannot help asking how they are directed.

and every day she is bringing more and more of the field of life under the control of these methods. Life cannot be treated as something which stands altogether apart from the laws which operate in the inorganic sphere. The maintenance, as opposed to the origin of life, seems, as Lotze says, to be given over to the control of physical and mechanical forces. And, in the second place, the position of science is reinforced by the criticism which she can direct against views which stand in opposition to her own. One such opposing view, now generally abandoned, is that maintained by the upholders of the theory of vitalism. These postulate the existence of some special vital force or peculiar power working in an organism, whose presence accounts for all the unique characteristics possessed by living things. But of such a theory we are compelled to ask what proof there is of the existence of such a force. Supposing it to exist, how are we to conceive of its action? It is an unknown quantity of which we can form an idea only in proportion as we interpret it in terms of known forces, and then it loses its special features. A vital force, as something which rises above the physical nature and limitations of the organism, is a hypothesis which we

cannot accept. Science not unnaturally shrinks from handling unknown quantities. Höffding[1] gives as a reason why the theory of vital force so long held its ground the fact that men thought of the organism as an absolute unity rather than as a complex whole. Organisms, for example, responded to external stimuli in a manner which seemed to stand in no exact relation to the stimuli. Why, for instance, should light make a plant turn to it? Why should the response of the organism be, as is so often the case, of the nature of adaptation to environment? To account for this peculiarity, men invoked the aid of a peculiar force, whereas the true explanation would seem to lie in regarding the organism as a very complex, organised whole. Stimuli received at one point of the organism would be transmitted to another, and would in this way pass through the whole system, and the effects produced by the stimuli would vary according to the nature of the forces in the various parts of the organism. Thus the final result might be something very different from what was taken into the organism at the first. Organic response to external stimuli must, therefore, be richer and

[1] *Outlines of Psychology*, chap. ii., p. 34.

more varied than inorganic response, just because organisms are richer in content and possess a greater amount of stored-up energy ready to be liberated. It is, says Höffding, "by an analysis of the individual factors in the vital process" that the new view has arisen, which regards the organism as a complicated machine to be explained on mechanical principles. Opponents of this mechanical type of explanation sometimes adopt another line of argument. They insist that the growth of an organism can only be accounted for if you allow that the idea of the whole was, in some way, present as a controlling factor throughout the whole development. In a mechanical structure the whole arises out of and as a result of the combination of the parts; but in the case of a living being we seem obliged to think of the whole as in some sense preceding the formation of the parts and regulating their development. We tend, as Lotze puts it,[1] to think that "the form of the whole is already present in the developing body as an animating and regulating power even before the whole sum of parts, by which its outline is one day to be filled, are yet in existence or in their right places".

[1] *Microcosmus*, bk. i., chap. iii., pp. 63, 64.

We are compelled, that is, to fall back upon the idea of predetermination, which we have treated as a canon of finality. But if we adopt this theory of the immanent or indwelling idea of the whole, and invest that idea with active powers of control, we are not really nearer any satisfactory explanation of the problem. All we do is to emphasise our refusal to acquiesce in the mechanical theory. Just as in the case of the theory of vital force, so here, we can form no conception of the mode of operation of this idea or of its relation to the physical forces in the organism. The idea, certainly, cannot be independent of such forces, and there are plain limits to its power. The existence of organic malformations and of departures from type are enough to prove this. The growth of the organism can be arrested or interrupted by the use of physical force, and the existing arrangement of its parts can be broken up. The idea can only act in connection with the physical forces of the body, and, if you insist upon its presence, you must reduce it to the level of a physical force. The conception of a regulative idea, out of all connection with the physical system of the body, floating above it, as it were, and interfering from time to time to modify or set

right a development which is being carried on by these mechanical forces is a conception which we cannot admit.[1] If, urges the upholder of the mechanical view, we could only understand fully the systematic connection of the parts of an organism and the interaction of all its forces, then we should see that there was no necessity to fall back upon either of these additional hypotheses.

What, then, are we to say by way of final criticism about this attempt to press mechanical principles of explanation to cover the facts of life? We need not fear it because of the limitations which are inherent in it, and which any fair-minded man of science would readily allow to be there. Let us assume that science has achieved her ideal, that life can be shown to be amenable, in all her details, to physical treatment, may be created even out of the inorganic. Are we, thereby, reduced to regarding the world as a blindly working machine, soulless and dead? Far from it; for, in the first place, the mechanical explanation of life gives us no theory of the origin of the world. Science can only assume, as an eternally existing fact, an original con-

[1] Lotze, *Microcosmus*, bk. i., chap. iii., pp. 63-7.

stitution of matter or certain primal relations between the original elements of which matter is composed. But with such an assumption our minds cannot rest satisfied; it itself needs to be explained. What is this unity of differences which is postulated as the fount of all being? What is the bond which holds the elements in relation? Why do they form a whole or system at all? We are driven, by a deeper analysis, to interpret that ultimate arrangement in terms of mind. Mechanism cannot explain it, and, if so, neither can it explain the development which has issued from it. In fact, mechanism explains nothing, but itself everywhere needs explanation. If there was an ideal significance in the original constitution of the world, there is an ideal significance in every stage of its evolution. Throughout the whole realm of physical Nature there may operate one system of laws, but these laws are differently applied in different departments, and yield varying results, which cannot all be interpreted on the same terms. Reality, in its different grades, calls for the use of different categories. Thus, while science seeks to interpret life and its processes in mechanical terms, her explanations can never do full justice to the facts. For the facts not only exist, but have

meaning or significance, and may be regarded from the point of view of their ideal worth. Nothing can alter the fact that we do find a fuller meaning in an organism than in a stone; and the more highly developed the organism is the richer is its significance for our thought. The richest categories of interpretation are claimed by the richest existences; those of man, as a moral personality, and of God, who gives to the universe whatever significance any part of it may possess. Science does not concern herself with the problem of worth or value. She is interested in tracing out the connection between events. She singles out, for example, the movement of an organism in response to an external stimulus, and looks at that as a succession of happenings, a series of molecular movements. So much energy enters the system of the organism, a disturbance is set up, and so much energy is liberated and flows out again into the surrounding world. This is the account which science gives of the phenomenon. But the movement in question may also be regarded from other points of view, as displaying purpose or intelligence on the part of the organism, or as belonging to a being whose unity is such that we are compelled to regard its very existence

as significant, and all its activities as consequently sharing in that significance. Every event, in a word, can be both explained and interpreted. We can look for its meaning as well as its genesis, and the two inquiries are independent. The significance of autumn colouring for my mind and æsthetic appreciation is not one whit reduced if you tell me that the colour is due to chemical processes of decomposition in the leaves. That may be the mechanism through which the change in coloration is effected, but the beauty is there all the same, and makes its distinct appeal to my mind. The ideal value of a thing is not destroyed by showing the steps through which it has come about. And there can never, I think, come a time when we shall cease to regard the organic as something altogether richer and more significant than the inorganic, with a more marked unity, with purposive activities, and a promise, at each stage of its being, of future growth. Far more probable is it that we shall come to regard the inorganic as itself organic, and that life, and not matter, will be our ultimate category. For, after all, if mechanism can maintain life, and if once the organic arose from the inorganic, the inorganic must have in it the potency of life,

and, in interpreting it, we must give to it that which has issued from it. Finally, when the evolution of life reaches the stage at which consciousness and self-consciousness appear, is it not clear that these mental qualities cannot be explained in terms of mechanism? What meaning is there in saying that consciousness is a product of the chemical activity of the brain-cells; or, in the old phrase, that the brain secretes thought as the liver secretes bile; or that the mind is the organ of the body? These are all expressions which are applicable only to the physical series; they cannot be used to explain the connection between the physical series and a series which is entirely different in kind. The attempt to make mind a product of mechanical forces is confessedly hopeless. In addition, while science is building up her world of mechanical forces, it is mind, all the while, which is doing the construction. The matter of science is matter interpreted by mind, which has meaning only for mind, and which ultimately has existence only for mind.

An interesting problem arises here whether science, by adopting this ideal, and this mechanical method of explanation, may not be blinding herself to some of the facts of organic life;

whether, in short, the attempt to reduce biology to the level of chemistry and physics may not be putting scientific inquirers on the wrong track in the pursuit of their investigations. For a study of this problem the reader is referred to G. Sandeman's *Problems of Biology*, which contains a very thoughtful critique of modern biological method. The fundamental problem of biology, in its investigation into the nature of organisms, is the same as the problem of philosophy, how, namely, to interpret the unity and individuality of the organism. The organism plainly is a unity, and preserves its oneness through manifold changes. Problems of heredity ultimately turn on the endeavour to discover what it is which enables the new germ to grow true to type and to develop into a single self-contained life, which, more or less faithfully, reproduces the character of the parent lives. As Mr. Sandeman points out,[1] the theory of vitalism was an attempt to explain the unity of organisms. Doctrines of type involve the same problem, and it is the unity of organisms which has led to the calling in of some principle of design. The teleological problem, as applied

[1] P. 196.

to organisms, is just the problem of what to make of their individuality. Yet all modern biological theories set out by treating the organism as something which is to be analysed into component parts, as an aggregate of externally related elements. Nor does there appear to be any limit to the range of possible subdivision. We find, for example, theories of heredity, which postulate in the germ a definite, material particle as the basis of each single quality or characteristic which emerges in the course of the organism's development. The germ is thus conceived as a highly particulate substance, each particle being the carrier or vehicle of some separate characteristic. In other words, science, confronted with the unity and individuality of an organism, adopts a point of view which seems to deny the existence of the very thing which she set out to explain. Biology should find some other conception of organic unity than that of an aggregate of independent parts if she is to solve the problem before her.[1] For organic differences cannot be treated in their isolation. They are intrinsically related to each other and to the whole to which they belong. The more

[1] See *Problems of Biology*, chap. v.

you break up the oneness of the organism the more difficult will you find it to explain how it is that the parts are combined into a whole so unique and individual.

The difficulty which both science and philosophy find in explaining the unity of an organism serves to remind us that, in any department of inquiry, our thought is never adequate to the concreteness of the facts which we set out to interpret. Our experience of the fact comes first, our reflection on it comes later. Man lives before he philosophises, and in his thinking he can never do justice to the fulness of his experience, for thought is always in arrear of the facts of life. But it is the task of philosophy to bring to bear upon the facts the richest and most adequate conceptions which she can find, even though she can never hope successfully to mirror the concreteness of reality. Science, on the other hand, confessedly pursues an abstract method. She regards any fact from the particular point of view of the science in question and neglects all other aspects of fact. If knowledge is to advance it is absolutely necessary that science should adopt this attitude, for only so can she make clear to herself the exact nature of the problem which she is investigating. But

it is an attitude which has its dangers, for it may blind men to the fact that what they are investigating may have other meanings and a different significance. Let us take once more, as examples, the two instances to which we have already referred. It is possible to be so interested in the physiological processes which underlie our æsthetic appreciation as to forget that men have everywhere found a moral and religious significance in the beauty of the natural world. We may be so absorbed in analysing the mechanism of Nature as to disregard altogether her æsthetic appeal. But Nature, if she "labours as a machine," also, at the same time, and in virtue of the same laws, "sleeps as a picture";[1] and the one aspect of her is as true as the other. Or let us take this very problem of the individuality of an organism. It is possible so to dissect the organism as to forget that it is alive; so to analyse it into component parts as to lose sight of its unity; so to treat it as a temporary meeting-point of racial forces of heredity as to make the species or type everything and the individual nothing. And the danger is, that this attitude may become so engrained that the

[1] Mozley, *University Sermons*, Sermon on "Nature".

mind may become warped or biased and may tend to treat, as void of any real importance for a final interpretation of experience, those higher characteristics which emerge in the course of development. Any one, for example, who devotes his whole energies to an investigation of the material factors of heredity must find it more difficult to admit the immortality of a human being. Regarded as a mere living thing the individual does appear to be only a temporary phenomenon. While he perishes the race endures. Yet I believe it to be profoundly true that there is nothing in the world, no atom, no amœba, and *a fortiori* no man, which has not an eternal significance and value peculiarly its own. This is not the place in which to attempt to prove the validity of this conception of significant individuality. The justification for any such reasoned conviction is to be found, ultimately, in the thought of God, in whom we, and all things, live and move and have our being. Such a final metaphysic would endeavour to show that no existence, whether of molecule or man, has any possibility of being such, or has any meaning, apart from God; and that, if He is the ground and basis of all that exists, then for Him, if not for us, every detail of the world

must glow with significant individuality. All that I would suggest here is, that in the obvious significance which any single organism has for us, and in the more clear significance of our own personality, we have a plain hint that individuality, rather than type or kind or species or any other generalisation, is the word which best characterises the concreteness of reality.

CHAPTER IX

THE ARGUMENT FROM DESIGN—DIFFICULTIES AND OBJECTIONS

THE discussion in the preceding chapter has made clear some of the reasons which compel us to interpret organisms in teleological terms. It remains, therefore, merely to summarise those reasons before we pass on to consider other questions. Kant, with his usual profundity of thought, analysed the nature of living organisms, and no one, I think, has improved upon his analysis.[1] He singled out three characteristics of living things which appeared to demand a teleological explanation.

(*a*) The form of an organism seems to be such that we are unable to explain it in terms of mere natural law, that is, from the mechanical point of view of physical science. In an organism we are bound to think of the whole as being somehow prior to the parts. The organism is

[1] *Critique of Judgment*, part ii., secs. 64-69.

at once cause and effect of itself. "Nature, considered as mere mechanism, can produce its forms in a thousand different ways without stumbling upon the unity" which an organism shows.[1] Nothing accidental or purposeless occurs in an organism, but everything is arranged in due accordance with the idea of the whole; and we, therefore, call in a causality, working by ends, to explain the phenomenon. Kant, however, was careful to add that, if we could see further into Nature, we might be able to discover a reason for the form of organisms without being obliged to recur to a principle of design; though Nature, taken as a whole, can ultimately give no explanation of her existence or her unity, but requires us to pass behind her to an intelligence or principle of reason.

(*b*) Viewed in its growth an organism calls for a teleological explanation. A tree changes the inorganic substances which it assimilates into its own peculiar substance and imparts to them a special quality. The tree "develops itself by aid of a material, which, as compounded, is its own product". And, when it extends its

[1] *Critique of Judgment*, part ii., sec. 61.

life in the seed, it "generates another tree according to a known natural law. But the tree produced is of the same genus; and so it produces itself generically. On the one hand, as effect it is continually self-produced; on the other hand, as cause it continually produces itself, and so perpetuates itself generically."[1] Translating this into the language of molecular physics we see that the problem is, how to explain the determination of each of the myriad molecules to its right place in the structure of the tree, so that the whole preserves its unity and peculiar character. The tree, and the seed from which another tree springs, both seem to grow according to a predetermined plan, and reach out, as it were, to the realisation of an end.

(*c*) Finally, in an organism all the parts are reciprocally means and ends for each other. The leaves are products of the tree, but in turn minister to its life. The maintenance of any one part depends on the maintenance of the other parts. The whole organisation and constitution of a living thing appears to be purposive.

[1] *Critique of Judgment*, part ii., sec. 64.

Now we interpret organisms teleologically because we find in them features which resemble elements in our own purposive activity. We argue from analogy; and it is worth while to digress for a moment in order to see how this analogical reasoning works out. Argument from analogy is argument from resemblances—that is the simplest account to give of the procedure. We argue, or infer, that if A resembles B in some respects, it will do so in others. It is a form of inference, but only of probable inference, and the probability varies greatly in different cases. We have to take into account (1) the number of the resemblances, (2) their nature or character, (3) the presence and number of the dissimilarities. If A resembles B in fifteen important points the probability is that it will also resemble it in the sixteenth point, which is the new instance under consideration. But if A resembles B in five points and differs from it in ten the force of the analogy is obviously diminished, and that in proportion to the importance or unimportance of the dissimilarities. One resemblance in an important point, in something, that is, from which flow many other consequences, may be enough to give your argument a high degree of probability.

Let us now apply this analogical reasoning to the case of organisms.[1] We start from our own purposive activity. Here we are on familiar ground. We know that we do set before ourselves ends and consciously adopt means in order to reach them. From ourselves we pass to other men. It is foreign to our present intention to inquire in what way we become aware of the existence of intelligent human beings other than ourselves.[2] But, when we see a machine or a building, we unhesitatingly affirm that it was constructed by an intelligence like our own; because we are able to show that there is a striking resemblance in many important points between the structure in question and other structures which we have ourselves designed. In particular we emphasise this salient characteristic, that there are present a number of co-operating circumstances which combine to form one result, and we feel that this co-ordination of factors cannot have been due to chance. Some intelligence must have foreseen and arranged the combination. Bricks and bolts and

[1] See Janet, *Final Causes*, chap. iii., where this argument from analogy is worked out fully.

[2] For some remarks on this point see Taylor's *Elements of Metaphysics*, bk. iii., chap. ii.

wheels do not come together of themselves. Passing on lower down the scale we reach the activities of animals, which seem to display the same co-ordination of means to achieve ends. But here we have to distinguish between activities which are conscious and those which are sub-conscious or instinctive. Both equally involve action for ends and the selection of means to reach those ends, but in instinct we are confronted with a form of activity which we cannot explain. The following would seem to be the chief characteristics of instinctive activity.[1]

It is sub-conscious. It lacks individuality, for instincts are activities representative of a group of allied animals, which, as regards these activities, all act in the same way. The activities are congenital and hereditary, the newly born organism possessing them ready made at birth. In instinct many sub-tendencies are co-ordinated to reach the given end. Instinct is more complicated than simple reflex action and hence has been defined as "compound reflex action". Throughout the whole process, so far as we can judge, the activity never reaches the level of conscious intelligence. Finally, we come to the

[1] See Lloyd Morgan, *Habit and Instinct*, chap. i.

internal functions of organisms and to the growth and formation of their various organs; where, again, we find ourselves in presence of processes of extraordinary complexity, involving the same combination of means to produce the given result. It is this combination and co-ordination which is the phenomenon in each case to be explained. This is the essential point of resemblance between the various instances upon which our analogical reasoning turns. And to explain satisfactorily such complex adjustment and adaptation we seem obliged to invoke the aid of some teleological principle.

But it is at this point that our difficulties begin. As we descend the scale of Nature it becomes increasingly hard to define the character of the designing activity whose presence we feel compelled to assert. We move farther away at each step from the operation of the only principle of design with which we are familiar, that, namely, which is found in our own foreseeing and intelligent activity. What account can we give of the work of instinct? Or how are we to interpret growth? As we watch the development of an organism we feel that some mysterious designer is close at hand. We can almost see him at his task. Yet who is he? He does not appear to

stand outside his products, but seems rather to dwell within them, so that product and designer are one. How are we to describe the purpose whose gradual realisation we are witnessing? If we take refuge in the thought of God, and treat all the operations of Nature as modes of the Divine activity, we are at once confronted by the question, whether we can conceive of God as designing. Must not God's activity, of whatever kind it be, be something higher than what we mean when we speak of design? The remainder of this chapter will be devoted to an examination of these difficulties, for which we must attempt to find some solution.

Now, looking at the whole matter broadly, we may say that there are two ways in which we may conceive of design in Nature and interpret the activity of that first principle upon which both Nature and man depend. We may maintain, with Paley, that wherever there are ends in Nature there God is operative as an intelligence which acts consciously for these ends and devises the means to reach them. Or we may regard Nature as unconsciously working for ends, and interpret her activity in terms of blind tendency rather than of designing intelligence.

Taking the latter hypothesis first, we must

ask why such a theory was ever adopted. The answer, I suppose, is, that the difficulties in the way of thinking of God as a designer led men to try to frame a counter-theory which should be more free from objections and so easier of acceptance. To regard Nature as an organism, or great living whole, realising its end spontaneously, and not dependent on any external, supra-mundane cause, brings to some minds a satisfaction which they cannot find in the rival hypothesis of a designing God. We may note, in passing, that there are many variations of the theory which refuses to interpret Nature's causality in terms of conscious mind. It is unnecessary to discuss them here. The point about them all, whether they speak of instinct or unconscious reason or immanent idea, is, that they agree in characterising the operation of Nature, or of the first principle, upon which Nature depends, in a manner which precludes the ascription to it of anything really analogous to what we mean by intelligent activity. Nature is to be regarded as a self-contained and self-developing system, working unconsciously after the fashion in which we conceive instinct as working. But the objections to such a view are no less serious than the objections to calling God a designer. To

reduce the first principle and ground of all reality to unconscious reason fails to satisfy the demands of my intelligence. My own reason is not an unconscious reason. I act for ends, with full knowledge of what I am doing. How did I, a product of Nature, arrive at a stage of being which represents a higher level than that of the first principle? Can you derive self-consciousness and intelligence from Nature if they were not somehow already present in Nature? "He that made the eye, shall he not see?" As an intelligent being I demand in the source from which the universe has been derived some quality which can fairly be called intelligence. Again, are we not, if we adopt this theory, explaining the obscure by the more obscure? Instinct, or unconscious reason, is something of whose nature we are completely ignorant. Why offer this as our final explanation of the world-process? We are only making the darkness more intense. We should remember Kant's *dictum*, that it is illegitimate to substitute for a causality with which we are familiar one which is unfamiliar and inexplicable. Finally, as Janet points out,[1] why should we refuse to refer the

[1] *Final Causes*, bk. ii., chap. iii., pp. 358, 359.

unconscious activities of Nature to a conscious and intelligent source? Why are we to regard these activities as self-existent and ultimate? If spontaneous now in their operation they may yet owe their existence to the original causal activity of the Divine will and mind; or, as we may with perhaps more reason maintain, they may be the expressions of a continually operative Divine causality, the witnesses of a God immanent in all His works. We cannot rest in a theory which is so paralysing to the higher intincts of our personality.

Can we, on the other hand, speak of God as a designer? Can we overcome the weaknesses which are inherent in the teleological argument? Criticisms of the argument from design usually centre round this objection, that design is an unworthy conception to be applied to God. It is deemed unworthy on the following grounds :—

(*a*) The argument gives you only an architect and not a creator of the world. When man designs he works upon a material which he did not create, but which he finds ready to hand; and it is urged that the argument from final causes cannot establish more than this in the case of God. All it can show is, that, upon a

given matter, intelligence imposes order and arrangement. The objection, so far as it goes, is certainly valid. The argument from design cannot establish the existence of a creator. But the problem of creation is, surely, an independent problem which calls for a separate inquiry. The teleologist is not concerned with the question of creation. His task is to vindicate the existence of an intelligence which works through Nature to realise ends. He finds in Nature order, adaptations, adjustments, and argues that these things can have their origin only in a mind and will which called them into being and acts with intelligent purpose. The apparent design is no less if you assume that matter eternally existed. Whether it did so exist or no is a problem of a different order. The core of the teleological argument, the passage, that is, from certain features in the natural scheme to a mind in and behind the scheme, remains sound. It involves a confusion of the issue to drag in the question of creation.

(*b*) A similar line of defence helps us to dispose of the second objection, that the argument from design does not enable us to prove the existence of a God who is perfectly wise and

good, but only of a God who is very wise and good. We survey only a limited field; we cannot, therefore, argue to a God who is able to produce more than the amount of order and adaptation which we actually observe. But this is a criticism which, though it is undoubtedly true, does not touch the heart of the teleologist's contention. He is concerned, not with existences which lie beyond the range of his experience, but with the adaptations which confront him day by day in the natural world. He is asking what explanation he can find of these; and he maintains that the only explanation lies in the assumption of an intelligent God who produced these adaptations, and who, through them, is realising certain ends. However far we go in our exploration of Nature, everywhere we find it to be a home of order and adaptation; and so the conviction, which, as a practical postulate, underlies all the work of scientific investigation, is borne in upon us, that the universe, in all its parts, displays the same features. We see enough of Nature to make us argue to the existence of a Divine mind, whose operations are so vast and wonderful that we readily predicate of that mind the attribute of perfection, even though we may not be logically justified

in so doing.[1] The fact that the whole range of existence is not open to our inspection does not destroy the evidences of design which meet us in the more limited regions which we can observe. The problem of the absolute perfection of God involves other considerations than those which affect the teleologist. In particular, it involves the very important consideration, whether a finite mind can form any positive conception at all of what absolute perfection is. We must not criticise the argument from design for failing to establish a conclusion, which, when the argument is rightly stated, it never sets out to establish.

(*c*) Again, why should we attribute to God a conception, like that of design, which implies an effort to bring about the proper adjustment of the conditions, and involves a lengthy process of attaining an end through a succession of means? Cannot God be thought of as creating at one moment the matter and the adaptation? Is it not an unworthy conception of the Divine activity, thus to regard it, as working up into shape a refractory material? This is, probably,

[1] See Martineau, *Study of Religion*, vol. i., bk. ii., chap. i., sec. 1.

the criticism which is, more than any other, directed against the argument from design, and it possesses this validity, that it warns us against applying to God the idea of design in the precise form in which it is applied to human activity. In God we may reasonably postulate a unity of purpose and execution, in which design in the lower sense is transcended and taken up into a higher mode of activity, whereby it is made, not less than design, but more. But, until man becomes God, he cannot hope to make clear to himself the precise nature of God's manner of operation, though he may do more justice to its real character, by substituting for the calculating activity of the designer the thought of an activity which works by free, spontaneous impulse, and which is not compelled to think out beforehand each detail of the scheme, or laboriously co-ordinate means to reach a remote end. But for us, who look out upon the adaptations in Nature and who live under the conditions of the time-process, the Divine activity must appear as the activity of an intelligence which reaches an end through a succession of appropriate means. We cannot free ourselves from the time-process, and so are compelled to break up the unity and immediacy of the creative act

into the stages of an activity which is construed in terms of time. But I am unable to see that the core of the argument is rendered unsound. The essence of the conception of design is to be found in the thought that intelligence is present, and it still remains true that order, adaptation, arrangement, can be explained only if you postulate intelligence behind them. That intelligence may act in ways unlike those which characterise the operations of a human mind without ceasing to be intelligence. And it is difficult to see how the Divine mind could reveal itself, as such, to man's mind, unless it were through a development which involved the use of means to achieve ends.

(*d*) Once more, we are told, that it is derogatory to the Divine dignity to think of God as designing, because this implies that God wishes to reach certain ends, and so is not self-sufficient. He needs something for His own further self-satisfaction. But such a criticism is equally applicable to any theory which attempts to deal with the relation of God to the universe. Why should God create at all, or call into being a human race? The difficulty is no greater for those who speak of God as designing than for

those who prefer to use other language about Him. Nor can it fairly be maintained that activity for certain ends implies the presence of a defect in the agent. A poet may create in his own mind a poem. If he puts it upon paper has he thereby proved himself defective in any sense in which he was not defective before? The creative activity of God need imply no limitation upon His self-sufficiency. He may be thought of as moving continually towards the realisation of ends, and yet as being complete in Himself all the while, and as viewing the whole temporal process as one single act. Any limitations upon God, which the act of creating a universe may involve, are self-imposed limitations, which are, therefore, really evidences of all the greater power. Not a few of our difficulties in this connection arise because creation is thought of as beginning at a certain point in time. The idea of creation, as an endless process, and of the universe as the continuous self-expression and self-revelation of God, will be found on deeper reflection to be a more satisfactory conception.[1]

[1] The whole problem of creation, and of what we mean when we use the word, demands a separate treatment. See Lotze's *Philosophy of Religion*, chap. iii. All we are concerned here to show is, that the difficulties are not peculiar to the argument from design.

(*e*) The last criticism with which we propose to deal is, that the argument from design enables you to conclude only to the existence of God as standing in an external relation to the world, a conception which cannot satisfy the necessities of our thought. It is certainly true that the popular mind does picture God as a great external designer, who, with infinite skill and wisdom, arranges the exquisite adaptations which abound in Nature; and it is also true that such a thought of God, when we begin to reflect upon it, is found to be one in which we cannot rest. All the old difficulties about the existence of matter at once confront us. Does God find matter already existing to His hand? Or does He first create it in an unorganised condition and then impose order upon it? Whatever God is He must be thought of as the immanent reason and indwelling principle of life of the universe,[1] and the whole temporal process must be regarded as you would regard an organism whose development is from within and self-contained. We cannot apply to God the conception of design in the form in which we apply it to a

[1] See J. Caird, *Introduction to the Philosophy of Religion*, p. 139.

human workman. But none the less do the adaptations of the natural world inevitably suggest to us intelligence as their cause, and, as we have already said, when we speak of design what we mean, primarily, is intelligence. The question of the immanence or transcendence of God is a problem of a different order. In rejecting the conception of God as a designer we must be careful to insist that we still think of the operative cause as intelligent and purposive.

The refusal to attribute design to God is sometimes part of a larger refusal to allow that any quality or characteristic which has meaning among men can be predicated of the infinite. We are bidden to remember how little of the mystery of existence we can explain. Both in time and space the universe appears to be without limit, and our minds are dwarfed by it. Can we hope, it is urged, to comprehend in any way the nature of God, the non-phenomenal cause from which flows all this unending succession of phenomena? Is not God a name merely for the great unknown and impenetrable background lying out there beyond us, inaccessible to our finite reason? But such a conception of

the infinite inevitably leads to scepticism, and destroys any hope which we may have of rendering our experience orderly and intelligible. This agnostic creed is impossible as a final creed, and can be shown to rest on no sound logical basis. Is it conceivable that mind, which is the organ we have for knowing God, cuts us off from that knowledge just because it is our own mind? Let us suppose God to exist and to have given us our minds. Is it a tenable theory, that the faculty of knowledge which He has given us is the one barrier which prevents us from knowing Him? And how, if, in virtue of your finitude, you can say nothing whatever about Him, can you even say that He exists? You are, in saying that He exists, predicating something of Him. You have established communications between yourself and the unknowable, and, to that extent at any rate, the unknowable has changed its character and has become the unknown, or the only partially known. But if God is partially known there is reasonable hope that we may progressively come to know more of Him. The unknowable can never be the goal of human thought. The unknown is that goal, but, then, the unknown can more and more reveal to us its secrets, and

so becomes the known. To set up the infinite as equivalent to the impenetrable reality which fades into mystery the moment that we try to compass it, is to misuse the word. The infinite has another meaning, in which it becomes, not a mystery of darkness, but a mystery of light. Let us grant, by all means, that we cannot make completely clear to ourselves the nature of the Divine activity; yet we may still assert that it must have true affinities with what is highest and best in our own activity. Our wonder will be heightened, but our minds will not be paralysed. We take our stand upon our own personality. We are ourselves causally active; we act with intelligence to reach ends; and we know ourselves to be free and responsible. We find here something which may serve as a type of the Divine causality. In passing from ourselves to God undoubtedly we exercise faith. There is an act of moral trust, that the causality, which underlies the movement of the universe, is not altogether alien from what is highest in our own being. Reason cannot, perhaps, completely justify the step which we take, but, then, man is more than reason. The movement of his personality is one and undivided, and truth enters by other avenues than those of the in-

tellect alone. The charge of anthropomorphism, which is often levelled against the theist, has, indeed, some justification in it, if the theist attributes to God a human body, or the feelings which depend upon some bodily organ, or if he insists that mind exists in God in the precise form in which it exists in ourselves. But there is an anthropomorphism of a nobler type, which maintains that there exist in God qualities which really correspond to the qualities of will and intelligence and goodness which are found in men. All that the teleologist is concerned to contend for is this, that what we call design in man has in God a real counterpart, inasmuch as the results achieved both by God and man are achieved through the operation of conscious intelligence, though the mode of the Divine activity may be very different from the mode of the human. The first rude attempt of an amateur to paint a picture belongs to the same order of existence as the supreme genius of a Raphael. In the same way, as regards the presence of intelligence, the mind of man and the mind of God are akin. The argument from design possesses enormous value, as being an attempt to unfold the nature of a belief which lies beyond logical demonstration ; a belief of

which men find themselves possessed when they awake to consciousness of the meaning of their own existence; the belief in an ultimate intelligence, to which they give the name of God.

CHAPTER X

INTERPRETATION OF THE IDEA OF DEVELOPMENT

EVOLUTION or Development[1] is the key-word which unlocks the mind of the present age. But the word is a purely descriptive one, a formal term indicating a process of becoming. To describe the history of anything, the movement by which it has come to be what it is, is not to explain it. We may be able to show in detail the successive stages through which the acorn passes in its development into an oak, to trace them in their completeness, to observe how one modification melts by almost imperceptible change into another, but in doing this we have not explained or interpreted the

[1] The two terms may be taken as identical in meaning. If there is any shade of difference between them we might perhaps say that *evolution* directs our thought rather to the source, *development* to the goal, of the process which is under investigation.

growth of the tree. We are no nearer to the solution of the problem how or why all this happens. The causes of the development have not been discovered, nor its meaning and significance for our thought determined. So far we are moving only on the surface of things, and have not penetrated into their hidden depths. Our task has been one of simple description. As used by science the word evolution refers either to the life-history of organic forms or to the wider history of the universe as a whole. But the term is also applied to any subject-matter which can be shown to have a history, such as sculpture, religion, the constitution of a state; and, when so applied, it emphasises the fact that all presents have grown out of a past and are unfolding into a future, and that, if we would understand what we are investigating, we must, as a preliminary condition of our inquiry, adopt the genetic or historical method. The spirit of the age is pre-eminently historical; and, because it is that, it is also critical. A critical age is one which has learned to compare its present with its past. It neither acquiesces complacently in existing conditions nor regards them as final and permanently fixed. But it seeks to know how things have come to be what they are, and to-

wards what they are tending. It will ask, for example, whether the doctrinal statements of theology, which were accepted by an earlier generation, may not contain an admixture of elements which are local and accidental, and which the present age may have to discard; or, in the case of a political revolution, it will endeavour to discover the signs of earlier unrest which were prophetic of the final upheaval, and to determine the essential bearing of the revolution upon the future life of the state or nation. An age whose spirit is historical is one which has reflected upon the antecedents out of which it has sprung. It is aware of its ancestry and so of itself. It faces towards both the past and the future and knows itself as mediating between them.

It would be outside our present purpose to trace with any fulness of treatment the process of development by which the spirit of our own age has itself become possessed of the characteristics which I have described; but one, who will take the trouble to study that process, will see how the Romantic movement, which began in Germany in the eighteenth century, as something essentially introspective and subjective in method, took a new lease of life and became

more sober and less fanciful when it turned to the study of history. Past history was regarded no more as a matter for the chronicler or the antiquarian alone, but men began to realise that the past was still alive, and that its life could be recovered by a sympathetic insight. We find arising a genuine interest in the past, of which, among our own writers, the romances of Scott may be taken as an example. This was the age in which the true study of history began, in which the modern historical method was born. The sense of the continuity of human life impressed itself upon men's minds, and they began to understand how every age was vitally linked with and obeyed its predecessors, and how even reaction was a form of obedience. The past therefore must be investigated if the present would be rendered intelligible. Laws, customs, institutions, religion, art, all must be carefully examined in the light of their historical evolution, for the secret of their present meaning was to be found in the past from which they had sprung. Research into the past gradually grew scientific in scope and scholarly in method. Already the conception of development was dominating men's thought, and, having taken root there, it became marvellously reinforced by

the further application of the idea in biology and geology. To England belongs the honour of having produced the men who worked the transformation in the field of natural science; Lyell, in geology, with his substitution for catastrophe of the conception of slow-working, uniform, natural processes; and, in biology, Darwin, with his doctrine of descent in place of that of special creation. Thus hand in hand with the historic interest shown in the past went investigation by careful and patient research of the facts of Nature in the present, leading to the growth of the modern scientific temper and the inductive method. And the broad result of this change of attitude both in science and history is, that to-day we find ourselves mastered by this sovereign conception of development, whose richness and complexity seem to be inexhaustible. We have no chance, then, to understand the age in which we find ourselves unless we are prepared to adopt the historical attitude and to think things in terms of growth and evolution.

But there is one important caution to be borne in mind at the outset. Because development is only a formal term, descriptive of a

process, its inner meaning is not necessarily the same in the various spheres in which the conception is applied. The dynamic factors of one development may be entirely inadequate to explain another. The factors, which explain inorganic evolution (if indeed you can use the word evolution of inorganic changes) do not explain evolution in the animal world. Even if you allow that natural selection is a sufficient explanation of the development of the various species of plants and animals, it by no means follows that human history can be interpreted by the use of that one principle. The differences between the two spheres are obvious on a moment's reflection. In the animal world you have a struggle for existence, a ruthless and endless competition, in which the unfit go to the wall and perish. But when man appears upon the scene, though there is certainly struggle and competition, yet they are traversed by the law of love and sympathy. Morality emerges and transforms by its presence the whole process of development. Huxley insisted upon this in his Romanes lecture, *Evolution and Ethics*, where he pointed out that man climbed to the top of the wall by the ladder of animal cunning and ferocity, and, when he found himself there,

proceeded to disown the instrument by which he had achieved his ascent. We must remember, then, that the great world-process is made up of subordinate processes of development, each of which has to be explained by the catagories and methods appropriate to it. At the same time, it should be possible to arrive at some general principles and canons for interpreting the idea of development in its broader and more formal aspect, which shall be universally applicable wherever any evolutionary process is under investigation. We are concerned here with the attempt to discover a few such principles.

(*a*) The question which we naturally first ask ourselves, is this: What is the difference between development and change? Development includes change, as is obvious. But what further conceptions does it include which are not involved in the simpler idea of change? Perhaps we shall best make clear to ourselves the difference between the two ideas by the use of a simple illustration. Imagine a ball travelling along a groove which is bounded at either end by a block, and imagine, further, that when the ball reaches one end of the groove it at once travels back to the other end, and so goes on

indefinitely, always traversing and retraversing the same path. There we have a series or succession of changes. At each moment the ball is altering its position, and we, in watching it, are receiving a succession of varying impressions. But we do not think of applying the word development to that series of changes; for we regard them merely as recurrent phases of movement, in which the fiftieth journey of the ball tells us nothing more than the first had told us. On the other hand, when we watch the changes which happen to the seed as it undergoes its life-history and becomes the plant, there we unhesitatingly speak of the seed as developing. Why is this? Is it not because we view each change in relation to the end or goal which is to be the final outcome of all the changes? The idea of end or purpose at once comes in to give meaning to the successive changes which we witness, and our minds unify the whole series of modifications and regard them as a continuous series having relation to an end, which is ultimately to be attained through their succession. In the case of the seed we know, of course, that other seeds have become plants, and so we predict an end for this particular development with assurance. And we

can, to some extent, formally, at any rate, define what the end of the development is to be. The seed, we say, is developing towards the end of growing true to type, or of being perfect of its kind, or of becoming a self-maintaining whole, which shall then, when its own cycle of life is complete, perpetuate itself in another similar organism. Sometimes we cannot foresee what the goal of the development is to be, or cannot see it in its completeness. We cannot, for instance, form any adequate conception of the goal, towards which we believe that human society is moving; or, if an entirely unknown seed was discovered, we could not describe in any detail what the form of the mature plant would be. Yet, in these cases, too, we should regard the changes which occurred as movements towards an end, and as involving ultimately some conception of purpose, because we should see, almost so soon as the development began, that the changes were not merely quantitative changes in bulk, but qualitative changes, by which the organism took on new characteristics and became richer in content. We should observe that "increasing series of results" which Lotze mentions as one of the chief features of growth. Nor should we be content to regard

the changes as due merely to the influence of external conditions upon the organism, but we should attribute to the organism a power of spontaneous development, and view it, as in some measure a self-maintaining whole, reacting in its own appropriate manner to the influences of the environment. Development, then, differs from change in that it is change determined towards an end, and we seem compelled to interpret it in teleological terms. If we remove all thought of any goal to be reached by the developing organism, development appears to have no meaning for our minds. Is it true, however, that development always shows movement towards greater complexity and greater richness of content? Are there not changes in the life of organisms which result in simplifications of structure, so that the forms become, as we say, degenerate? Does not history show epochs of retrogression and decline? Difficulties such as these are really questions of definition. The large process of evolution certainly includes movements in both directions, towards greater complexity and greater simplicity, and development is nowhere always unilinear. We may refuse to apply the term development to such retrograde movements if we insist upon

making increase in complexity the main characteristic of development. Yet, even in a process of degeneration there still remain the reference to an end, and the realisation in the degenerate conditions of tendencies which in the more complete state were unrealised, and this would seem to bring the process within the general conception of development. It remains true, however, that our criterion of development is usually taken from those instances of it which reveal a gradual unfolding of what is more complex and more full of meaning. Increase of significance, and movement towards an end, these two characteristics are the essential elements in our conception. The movement towards greater fulness is, however, accompanied by some measure of loss. What is vital in the past is taken up and re-embodied in the new stage upon which the development enters ; what is not vital and essential is left behind. The snake casts its slough, the butterfly emerges from the chrysalis, the man outgrows the ideas of childhood, the earlier formulations of a truth may be imperfect, and the truth may have to be re-expressed. Yet, in all these cases, what is discarded is not of intrinsic importance. It is but the temporary expression of the living

principle which is ever forcing its way to fuller manifestation of itself, which, as it nears the goal of the process, ever more and more reveals its true nature in all its concreteness. We may apply to a development the thought which underlies the song sung by Ariel in *The Tempest*:—

> Full fathom five thy father lies;
> Of his bones are coral made;
> Those are pearls that were his eyes:
> Nothing of him that doth fade,
> But doth suffer a sea-change
> Into something rich and strange.

Change determined towards an end, which reveals the immanent purpose and meaning of the whole movement, is the first thought, which our analysis of the idea of development brings to light.

(*b*) From this point the transition is both natural and easy to the second canon for interpreting development, the canon, that it is in the end and not in the beginning of the process that the true explanation of the development lies. The oak unfolds the nature and meaning of the acorn. You cannot understand the significance of the seed except by reference to the mature plant into which it grows. A movement

in history must exhaust itself and reach its final stage if you are to appreciate all that it implies. There is more in the end than there was in the beginning; or, as we should perhaps rather say, what we describe as being potential and implicit in the germ becomes explicit as the development proceeds. Thus each stage in a development is prophetic and anticipatory of the succeeding stage. Its outlook is towards the future; it is pregnant with issues that are yet to be.

Such an interpretation of development seems sufficiently obvious. Yet there are not wanting thinkers who reverse this method of reasoning, and maintain that it is the beginning of a development which gives you the true canon for interpreting the whole. Analyse the beginning, we are told, discover the elements and factors there present, and we shall have all that we need for understanding the movement. The apparent greater fulness of the later stages is, it is argued, something which may be neglected, as contributing nothing which is of any importance to the general meaning of the process. This is the attitude adopted by the materialist, who, starting with matter as the only reality, and then finding himself confronted by the fact

of mind, treats consciousness as a mere by-product of material factors, which may be neglected in the final construction of his cold, dead, soulless universe. It is the attitude of the revolutionary reformer, who would sweep away at one stroke all the complex products of a long social development, would wipe clean the slate, and rebuild society on the ruins of its dead past. In theology the same phenomenon is witnessed. You hear men crying out for the abolition of all dogma, and urging a return to the simple ethical teaching of the founder of Christianity, on the ground that the technical definitions of the theologian are simply so much meaningless accretion, like the weeds which gather about the sides of the unused boat. But such an attitude seems to be a negation of what development implies, and empties the whole conception of its meaning.

Dr. E. Caird in his *Evolution of Religion*[1] well illustrates the procedure of these rival schools of thought. He instances religion, and the method of defining it. As we survey the field of religious phenomena we find religion existing in various degrees of development.

[1] Volume i., second lecture.

At the lower end of the scale is the savage with his crude superstition; at the upper end is Christianity; while midway between the two are innumerable forms of belief and worship, existing in every degree of development. The history of religion has been, in part at any rate, the history of progress from the lower to the higher types. When we ask, how, in the face of this varied subject-matter, we are to define religion, we meet with two answers. On the one hand, we are told, that, since religion has developed, we must seek for our definition of its true nature in the highest known form of it, for it is in the supreme type that the meaning of the whole evolution lies. On the other hand, we are bidden, if we would do justice in our definition to all the existing forms of religion, to seek out the common element in all the forms, that something which is characteristic of the dim gropings of the savage as well as of the reasonable faith of the Christian. This common element, present in all stages of the development, is the key to the meaning of the whole. But, if we adopt this latter view, we are confronted with two difficulties. First, we are neglecting the specific qualities of the highest form of religion. Christianity is clearly some-

thing far nobler and higher than the superstition of the savage. Its glory lies just in the fact that it has outgrown those lower and earlier forms ; and to define it in terms of that lower element, which is common to it and the lower forms, is surely to do it scant justice. To substitute for a belief in the Fatherhood of God the belief in dependence on some higher power or powers, vaguely conceived, or regarded as cruel and capricious, is plainly to be unfair to Christianity. Secondly, we are neglecting the essential fact, that the lower forms of religion have developed, and so must themselves be regarded as capable and prophetic of higher achievements in the future. To insist on the common element in all religions, as expressing the essential meaning of religion, is to forget that religion is, by its very nature, a progressive thing, which must be judged and interpreted in the light of its possibilities and its capacity for further growth. At the same time, it would hardly be right to define savage religions in terms of Christianity, for, obviously, they are Christian only by a very liberal interpretation of their possibilities of development. The truth is, as Dr. Caird points out, that, though the meaning of a development is to be found in the end reached by the de-

velopment, yet, for the full interpretation of it, you must read the process both backwards and forwards. Light is thrown upon the movement from both ends of the scale. And, if a definition of religion is possible, we must seek for such definition, in terms of some principle or conception, which is itself capable of progressive enrichment as it is applied to the successive stages of the development. We might, for example, adopt some such provisional definition of religion as the following: "Religion is man's appropriation of God's revelation of Himself". This is not, of course, offered as being in any way an exact or adequate definition (to find a definition of religion is no easy task), but rather as an attempt to discover some illustration of the principle for which we are contending. Here we have a conception which acquires a growing meaning when it is applied to the higher types of religion. The savage appropriates God's revelation in meagre fashion. He enters into some kind of relationship and communion with a power which he conceives as superior to himself. The Christian does the same, but his appropriation is richer and completer, and he believes that, as his experience widens, it may become yet more complete. To

define, however, is not the important thing. Definitions are always inadequate to the complexity and concreteness of their object. Least of all are definitions satisfactory when you are dealing with something which develops and alters as it grows. For at every moment the growing thing leaves its past behind it and emerges into fuller existence. You can never arrest its movement. If you seize upon any single stage of its history, and try to define it in terms of that stage, you find, when you have finished your task, that the object of your definition has become something other than it was. It is the same, yet it is different; it has, in its growth, transcended its earlier condition and passed beyond it, and your definition is not adequate to its present content. But though to define may be relatively unimportant, what is important, is to remember that the earlier stages of a development do not provide us with material which will enable us to interpret the whole movement. It is to the end that we must look, to the final stage, which makes explicit the meaning of the earlier stages. For from the end light is reflected back upon the beginning. The beginning takes on a new glory, and we see it full of the possibilities

which later growths have made actual. We recall, in this connection, Browning's lines in *Paracelsus*. The poet is speaking of the human faculties of power, love, knowledge, and says :—

> Hints and previsions of which faculties,
> Are strewn confusedly everywhere about
> The inferior natures, and all lead up higher,
> All shape out dimly the superior race,
> The heir of hopes too fair to turn out false,
> And man appears at last. So far the seal
> Is put on life; one stage of being complete,
> One scheme wound up: and from the grand result
> A supplementary reflux of light,
> Illustrates all the inferior grades, explains
> Each back step in the circle. Not alone
> For their possessor dawn those qualities,
> But the new glory mixes with the heaven
> And earth; man, once descried, imprints for ever
> His presence on all lifeless things: the winds
> Are henceforth voices, wailing or a shout,
> A querulous mutter, or a quick, gay laugh,
> Never a senseless gust now man is born.
> The herded pines commune, and have deep thoughts.

Here we have expressed one side of the truth, that, in the light of the present, the whole past receives new meaning. And a little later in the same poem we see the other side of the truth, that the present itself is to be interpreted as

full of possibilities which the future will make actual :—

> All tended to mankind,
> And, man produced, all has its end thus far :
> But in completed man begins anew
> A tendency to God. Prognostics told
> Man's near approach ; so in man's self arise
> August anticipations, symbols, types,
> Of a dim splendour ever on before
> In that eternal circle run by life.

(*c*) The third canon [1] for interpreting the idea of development is, that the value or significance of a thing is independent of its origin or of the method by which it came to be. We have already referred to this canon, but its importance is such that no excuse is needed for mentioning it once more. Origin is no test of validity. The worth of my personality is not now affected by the fact that once I existed as a microscopic, unconscious cell. The present value for my thought and emotion of a moral act is not one whit diminished, even though you could prove (which I should hesitate to allow) that the sense

[1] This canon may perhaps be regarded as identical with our second canon. The second canon certainly includes it by implication ; yet, for purposes of exposition, it may be treated as a distinct principle.

of duty has slowly arisen out of impulses which once had no moral colour. Social institutions do not lose their significance because we are able to trace the development of society from the primitive horde. A lowly beginning cannot discredit a noble ending. We must insist strongly upon this, because the idea of evolution is so often used, as we have seen, to depreciate much that we think of value and importance. Religion, for example, is in many quarters belittled by tracing its origin to dreams or ghost-worship. We are asked to believe, that, because it arose (if it did so arise) out of these crude beginnings, therefore it is to-day no more significant for us than it was for our primitive ancestors, and that all the added content which it has received in the course of its development has made no clearer for our thought the meaning of its essential principle. A good instance of this method of treatment is to be found in some evolutionary theories about remorse. Remorse is one of the most striking of ethical phenomena. It is charged with deep, moral significance, and is a powerful agency in the making of character. Now we are told, that, if we would appraise this emotion at its true worth, we must go back to the very early days of society, when man lived

less as an individual than as a member of a tribe. The most important fact about man then was his tribal consciousness. He thought of himself almost exclusively as a member of the society to which he belonged, and his actions were directed to the good of the tribe. In course of time the sense of his own individuality developed, and there arose the inevitable conflict between a self-seeking impulse and one which had as its end the welfare of his society. In a moment of temptation he chose the former, but, no sooner had he done so, than the stronger and more enduring social impulse reasserted itself and issued in the disquiet of remorse. All further yieldings produced the same results, and man's life became a battlefield where the fight was between the more permanent social tendencies within him and the weaker, though temporarily dominant, individualistic impulses.[1] Now an analysis of remorse to-day reveals the presence of many other ingredients besides that of a conflict between a tribal and a self-regarding factor. Thoughts of a violated moral order, to which homage is due, fill the mind. The sense of sin, with its further reference to the will of a

[1] See W. K. Clifford's *Lectures and Essays*, "The Scientific Basis of Morals," pp. 290-3.

Holy God, casts its dark shadow on the scene. The quality of the emotion is profoundly changed. Are these new elements, which have arisen in the course of man's ethical development, to be disregarded? Can we treat remorse merely as the presence of a stronger tendency reasserting itself after a temporary defeat by a weaker one? Is strength a moral quality at all? If so, then you might equally maintain, that remorse is to be found in the case of a great sculptor condemned to manual labour in the fields when his whole soul is afire with the yearning to create. The artistic tendency in him is the strongest thing in his nature. It will be perpetually rising up in him and striving to assert itself. But can you fairly compare his emotions, the uneasiness and irritation which he experiences, with the anguish of the writer of Psalm li., when he cries out: "Against Thee, Thee only, have I sinned, and done this evil in Thy sight"? Would you regard the sublime prophecies of Amos and Isaiah as void of meaning, because the earliest form of Hebrew prophecy had kinship with the frenzy of the dervish; or treat the masterpieces of Pheidias and Praxiteles as less a true expression of the soul of the sculptor, and the possibilities of his art, than the rude archaic creations

which marked the first attempt of the Greek genius to embody ideas in wood and stone? Surely, in our estimate of any development, we must take account of the qualitative differences which reveal themselves as the development proceeds. They are real, and they cannot be discredited by showing that once they did not exist. Potentially and ideally they did exist, and it is the ideal meaning of a development which is its true meaning. Our judgments of value are not affected because we happen to look at things from a genetic and historical point of view.

Nor must we allow ourselves to be deceived by the fact that in a development the transition from one stage to another may be effected by very gradual steps. The distinction between A and B does not cease to exist because A is connected with B by a series of intermediate stages, C D E F, which make a complete bridge of transition between the two. However minute the gradations may be between two points in a series, yet, if we compare the two points, we shall see that they differ, and the importance of the differences between them is not affected by the fact that they have been brought about

gradually. We have only to pass over a sufficient number of intermediate links in the chain to be aware that differences have emerged, and that a new significance has been given to the movement. The idea of evolution has certainly tended to obliterate the hard and fast lines of distinction which we were once accustomed to draw in our mapping out of the world's history; and the result for some minds has been that they have grown confused, and have failed to see that the significance of the final result of any process is not reduced because that result has been brought about gradually. We may mention here, in passing, that the maxim *natura nihil facit per saltum* is by no means necessarily of universal application. We have already seen that there is a growing belief among biologists that all organic changes have not been brought about through the preservation and accumulation of minute variations. Just as there may have been epochs in the past when protoplasm was more unstable than it is at present and so was capable of great and sudden modifications; just as the uniformitarian hypothesis in geology may need to be supplemented by the catastrophic; so everywhere, when we are discussing a development, we must allow for the possibility

of changes being both rapid and large. Certainly, in the sphere of human history, enormous modifications of the course of development have been brought about suddenly by the action of vigorous, creative personalities. But whether the observed changes be rapid or slow nothing can alter the truth of our main contention, that validity is not affected by origin.

It is the recognition of this principle which may be said to mark one of the differences between philosophic inquiry and the inquiry of science or history. The special sciences investigate each their own region of fact, frame and verify their explanatory hypotheses; and, if the science is one which admits of the application to its subject-matter of this conception of development, the science will endeavour to present its facts in a serial order, and to discover the law of their evolution. The historian in like manner, though with less success, because of the greater complexity of the subject which he is investigating, adopts the genetic method, and traces out the development of institutions, polities, forms of government, and of the ideas which they embody, thus seeking to give order and unity to the tangled mass of fact which confronts him. But philosophy is primarily

interested in an inquiry of a different kind. She does not, in the first instance, ask how things have come to be, but rather, given any fact, what is its meaning and significance. How is it related to the great system of all things? What is its place and importance in the final unity of reality? What is its ideal significance? She takes from science and history the results of their several inquiries, but she does not rest in them. She wants to know whether there is not more in the facts than either the man of science or the historian realise. She asks, whether in the very methods by which they have arrived at their conclusions, there are not concealed certain assumptions or presuppositions, which, when they are made plain, give a new and richer meaning to the facts under investigation. Let us take, as an example of the difference in attitude between science and philosophy, the development of morality. Ethics, as a historical science, is concerned to trace out the origin and growth of moral ideas and sentiments, to show how our complex ethical conceptions of to-day have arisen out of conceptions which were once simpler, and which deepened and grew more full of content as society advanced in civilisation. And then, pursuing her inquiry

beyond the frontiers of humanity, she goes on to discover the germs of ethical ideas in the animal kingdom, with which man has blood-relationship, and tries to find there, or even in the sub-animal world, the presence of tendencies or forces which foreshadow the morality of human society; thus laying the foundation of the moral in the non-moral, and deriving the ethical from the unethical. She hands up her results to philosophy and is met by the retort, that it is impossible so to derive morality from the non-moral, that no bridge can span the chasm between the two. But then, there is the plain evidence that human life is derived from an animal ancestry, and there is the growing conviction that there are no gaps at all in the story of the world's development, but only innumerable transitions, by which you pass from simple to complex, from lower to higher, in physical and spiritual spheres alike. The philosopher would even be ready, for the sake of argument, to meet the ardent evolutionist, and admit the existence of a hypothetical series of anthropoid ancestors of man, each of whom grew gradually more and more aware of the meaning of morality, of duty, and obligation, and the ethically higher; and yet he would still maintain

that there was no passage from the non-moral to the moral. For, at whatever moment in the historical development there dawned in any mind the first conception of an end that *ought* to be, and a law that *ought* to be obeyed, there, says the philosopher, you have an absolutely new phenomenon, unlike anything which had gone before it. And it can be explained only by its own appropriate categories. Before the emergence of this new kind you had a tendency towards an end; now you have a recognition of an end that ought to be pursued, and there is no common measure between a tendency and an "ought". There is a logical gap, a gap for interpretation and for philosophy, which inquires into the meaning of things, and this gap remains even though you make your historical record as complete and continuous as you will. Or, once again, let us suppose that it is the evolution of the mind which is under investigation. We are interested, let us say, in comparative psychology and are trying to trace out how mind has arisen in the race, how it develops in the human infant, and how in lower degrees it exists in the animals. We wish to set forth in due order the whole ascending series of mental phenomena, crowned by the self-consciousness

of man. Philosophy accepts the results of our investigation but makes a similar statement, that for self-conscious mind no origin can be found, because between self-consciousness and what is not self-conscious there is an impassable gulf. The two are distinct in kind, and each has a distinct significance. For thought there is no transition between the two, even though, as a matter of historical sequence, finite self-conscious beings may have appeared upon the earth at a definite point of time. Philosophy is concerned with estimating the place of mind in the total world-scheme, and her inquiry is not a historical but a logical or metaphysical inquiry. Mind, for her, is the prius of all being. Things exist only for thought, and you cannot therefore derive from the phenomenal order that which is the very condition and presupposition of there being a phenomenal order at all. As we have already said, when science constructs her story of the universe, she is apt to forget that all her hypotheses, all her tabulation, the whole fabric of her activity, is the work of mind. Now you cannot trace the origin of mind from the phenomenal conditions which mind herself constructs. Before there was any human consciousness at all there was an orderly world, and that world

must have been thought by an eternal mind. The world-process cannot be made to yield mind as a product, unless mind was present there all the while; not, of course, your finite mind and mine, but an eternal mind in which we all share, and which is the great presupposition of all existence. The problem of philosophy, then, differs essentially from the problems of science or history; and so unfamiliar to the common mind is the philosophic problem and method, that philosophy is often held to be a foolish and fanciful pursuit. But a little reflection will disabuse the mind of that prejudice. The philosopher is certainly a star-gazer, for he desires to find the central sun whose influence governs all the movements of the spheres. But, while he gazes on the stars, his feet are firm on earth. They are just facts, hard, concrete facts, in which he is interested; only, behind the fact he sees the meaning of the fact, its worth, its ideal importance; behind the historical and temporal processes of becoming he sees the eternal significance of that which changes not and can never become.

CHAPTER XI

THE TESTS OF DEVELOPMENT

WE have endeavoured to indicate in outline what general attitude we should adopt in examining any development, whether of the world-process as a whole, or in any smaller department of change. But we shall not have completed our investigation until we have come to a decision upon a very important point. We have to reach, if we can, some criterion or standard for testing the worth and appropriateness of the successive stages in a development. Upon what grounds do we regard some of these stages as a departure from what we conceive to be the true line of evolution, and others as contributing to the essential meaning of the process? This is clearly an important question, and one which calls for an answer.

Now, in order that we may understand the nature of the problem before us we must draw

a distinction between developments in Nature and developments in history. With the emergence of man upon the stage of the world there came into operation new factors; or, if some of these factors may have existed in a more rudimentary form in the sub-human sphere, in man they received, at any rate, new significance and force. The factors, to which reference is made, are freedom and morality, or the presence of ideals consciously recognised and followed. In human history the process of development is in part qualified by the intervention of man's activity; and this activity, if it is to be rightly interpreted, must be, at least to some extent, construed in terms of freedom. Man can, in some measure, freely and genuinely determine the line which the development of his religion, his institutions, his political life shall take. He can choose his course of action. He certainly possesses the consciousness that he is free. He regards his actions as his own, and himself as responsible for them; and, if he is deceived, then it becomes difficult to give any satisfactory explanation of how this universal illusion arose. What follows from this belief in human freedom, and in the existence of ideals which a man feels that he ought to—not must—pursue? Surely

the conclusion, that not all which has occurred in past human history is either right or necessary. There has been development, and, on the whole, viewed broadly, it may have been in the right direction; but there may also have been much in it which ought not to have been. The development may have been distorted and warped. Instead of advance there may have been retrogression, which might have been avoided; and the development need not, in all its stages, have been necessary or true. The moment you pass away from the region where tendency operates, where movement is to be construed in terms of a driving force from behind, and find yourself in a world where there is free choice and a deliberate selection of ideals, then any development becomes at once a subject for criticism; and it is open to any one to maintain that certain stages in it are a departure from the true nature and meaning of the evolution. There are those to-day who would regard the world-process, in all its stages, as the necessary unfolding of some great, immanent purpose, and each step in the development as an essential moment in the life of God, so that whatever has been, or is, could not have been otherwise. But such a theory appears to involve the nega-

tion of what we mean by human personality. History is more than a logical or necessitated movement. It is a sphere where great issues are freely determined by the clash and collision of human wills. On the theory, which we are combating, what account are you to give of moral evil? Is such evil a necessary mode of the Divine existence? Are the crimes that stain the page of history merely the discords, which, when taken together, make up the universal harmony? That a great purpose is being worked out through the ages, and that the movement of the world is tending towards a goal, we must all believe; but we cannot exalt God's control of the process at the expense of human initiative, or do violence to the moral condemnation which we instinctively pass upon much that has happened in earlier times, or that is happening now.

It will be instructive, at this point, to refer to Newman's *Development of Christian Doctrine*. We shall not discuss it from the standpoint of theology, but from that of philosophy. A theological treatment of the work would carry us into regions lying entirely outside the scope of these lectures. Newman was, perhaps, the first to introduce the idea of development, as a formal

principle, into English theology; and he was also the first to suggest any criterion for testing the character of a development. His book is, of course, a personal apology for his abandonment of Anglicanism and adoption of Romanism. It is an attempt to justify a step in the development of his own life to which he was driven by a mixture of many motives; but the interest of the volume extends far beyond the personal element in it. It is the first attempt to construe, critically and analytically, the conception of development as applied to theology. In the Church of Rome Newman found a historical continuity which he failed to find in any other Church. This at once appealed to him, for he was looking for a Church which should be at once united and linked to primitive times. Yet, how could he justify the changes in doctrine and practice which seemed to separate the Roman Church from the undivided Church of primitive ages? Continuity the Roman Church possessed. Could it be said faithfully to reproduce the temper and teaching of the early Church? Newman answered that question by suggesting that there was such a thing as development in doctrine. There is development in Nature. The bird is very different from the egg out of which it has

come, yet it is one and the same life, which has developed without undergoing any breach of continuity. May there not be a similar evolution in theology by which great transformations of doctrine and practice may be achieved without any loss of identity in the Church which exhibits all these changes? It was through the application of the idea of development that Newman solved the problem which he had set himself, or which had been set for him by the current of events on which his life was sailing. But, if we examine Newman's treatment of the conception, not from the standpoint of a Protestant theology, but simply in the light of what, in other regions of history, a development means, we shall find ourselves compelled to criticise it somewhat severely. The central criticism which we pass upon it is, that the doctrinal development, which he describes, is not a free, historical development. It is one which proceeds under the control of an authority which decides between the modifications which occur, and determines which may be accepted and which are to be rejected. These are his own words: "This is the doctrine of the infallibility of the Church; for by infallibility I suppose is meant the power of deciding whether this, that, and a third, and any number of theo-

logical or ethical statements are true".[1] The development unfolds under the eye of an authority, conceived as infallible, a theory which clearly removes this particular development out of reach of the ordinary forces which regulate any other development in history. The development takes place in history, but it is not a historical development. Newman's theory fails to do justice to the essential nature of historical development. As Dr. Fairbairn puts it,[2] he attempts to treat a historical development as if it were a logical one, in which the later stages were necessarily implicit in the earlier, and unfolded themselves in due sequence by a rigorously determined movement. History is called in to give support to a theory of development which is conceived independently of a true study of history. So soon as we begin to investigate the complete, historical movement of Christianity, we find that it is impossible to rule out as "corruptions" all developments which have taken other lines than those followed by the Roman development. The word "corruption" was for Newman the opposite of development.

[1] *Development of Christian Doctrine*, ninth edition, chap. ii., 2, sect. 4.

[2] *Christ in Modern Theology*, div. i., chap. i., sect. 2.

He defines it as "the breaking up of life preparatory to its termination,"[1] or as "a development in that very stage in which it ceases to illustrate, and begins to disturb, the acquisitions gained in its previous history".[2] "This resolution of a body into its component parts is the stage before its dissolution; it begins when life has reached its perfection, and it is the sequel, or rather the continuation of that process towards perfection, being at the same time the reversal and undoing of what went before."[3] The non-Roman developments show no sign of tending to decay and self-destruction. Many of them are full of vitality and pregnant with great possibilities for the future. Is it conceivable that they contribute nothing to the essential meaning of Christianity?

Newman failed to realise with sufficient clearness the fact, that Christianity was introduced into a world which was already rich with existing civilisations, systems of thought and belief, long-continued habitudes and customs. It made no attempt to blot out all this work of previous

[1] *Development of Christian Doctrine*, p. 17.
[2] *Ibid.*, p. 199.
[3] *Ibid.*, pp. 170, 171.

centuries, but came rather as a new germinating principle, which was to operate among these already existing forces. This was the rich environment in which the new seed was planted; and, like any organism, whether plant or animal, the seed must take some colour from its surroundings. Christianity proved its power, as time went on, by showing itself capable of assimilating from the various environments, in which it found itself, whatever vital nutriment they had to give. But the result was, that the evolution of the religion was not everywhere uniform or the same. Indeed, one cannot see how it could have been so. If it was to be, as we believe, the one, universal religion, its development must exhibit variations corresponding to the differences of national life and thought and temper. Only in a uniform environment can you expect any measure of uniform development. If you take a garden plant and put it in a desert it will change its character. Again, the richer the content of the germ, the greater are its possibilities of varying. Newman, then, we may say, did not make enough allowance for the influence of the environment upon the organism of Christianity in determining its lines of growth. Nor does he

seem to have seen that his own theory of an infallible authority, sitting as arbiter over the development of doctrine, was itself a development. We may well ask with Dr. Fairbairn how that, which is itself an exhibition of the law of development, can be used as the final criterion of what development means.[1]

We need not, however, dwell longer upon the fallacious character of Newman's theory. Our object in referring to the theory was not primarily to criticise it, but rather to gather from it some suggestions for the discovery of criteria or canons with which to test a development. That we need these canons is clear, unless we are prepared to allow that every stage in any historical development is a strictly necessary and essential part of the evolution. Now Newman suggests seven principles for testing a development and for distinguishing between a development and a corruption. They are as follows :—

1. *Preservation of type*, "suggested by the analogy of physical growth," in which the "adult animal has the same make as it had on

[1] *Christ in Modern Theology*, p. 33. See the whole of chap. i.

its birth,"[1] the limbs of the man being larger than, yet the same as, those of the infant. "Unity of type becomes so much the surer guarantee of the healthiness and soundness of developments when it is persistently preserved in spite of their number or importance."[2]

2. *Continuity of principles.*—In national life, for example, if there is an abandonment of the great principles which characterise the national existence, such as love of freedom or justice, there you have a sign of corruption; but if they are preserved then you may be sure that the development is a true one.

3. *Power of assimilation*, that is, a power on the part of the developing organism, be it idea, or plant, or body of doctrines, to grow, by incorporating into itself material from outside, and by using what is so absorbed to promote its own more healthy development.

4. *Logical sequence.*—"There is a certain continuous advance and determinate path which belong to the history of a doctrine, policy or

[1] *Development of Christian Doctrine*, pp. 171, 172.
[2] *Ibid.*, p. 178.

institution, and which impresses upon the common sense of mankind that what it ultimately becomes is the issue of what it was at first." [1] An analysis, therefore, of the later stages of a true development will reveal that they are the natural outcome of the earlier stages. This would equally apply to the later stages of a corruption. The final degeneration of a character would be seen to be the natural fruit of seeds of evil which had effected lodgment in the life in earlier days.

5. *Anticipation of its future*, where, on analysis, one can discern in the early stages of a development hints of what is found later. "Instances of a development which is to come, though vague and isolated, may occur from the very first, though a lapse of time be necessary to bring them to perfection." [2]

6. *Conservative action upon its past.*—In a development you have "a tendency conservative of what has gone before it," whereas, in a corruption, what was gained in the past is dissipated and lost. "A true development, then, may be

[1] *Development of Christian Doctrine*, p. 195.
[2] *Ibid.*, p. 195.

described as one which is conservative of the course of antecedent developments, being really those antecedents and something besides them; it is an addition which illustrates, not obscures, corroborates, not corrects, the body of thought from which it proceeds; and this is its characteristic as contrasted with a corruption."[1]

7. *Chronic vigour.*—"While a corruption is distinguished from decay by its energetic action, it is distinguished from a development by its transitory character."[2] Corruption cannot be long-lived, and so duration may be taken to be a test of a true development; not a duration, however, of mere immobility, but one in which the life remains vigorous and progressive.

Such are the tests which Newman would apply to a historical development, whether of idea, institution, or body of doctrines (and Christianity is all of these), in order to decide if it be a true or a false development. They are certainly very suggestive, and they lose none of their suggestiveness even though, in other hands, an application of them to the same

[1] *Development of Christian Doctrine*, p. 200.
[2] *Ibid.*, p. 205.

subject-matter might yield very different results. To some extent the seven tests overlap, and they can be simplified and reduced in number. For example, preservation of type, continuity of principles, and logical sequence, seem to amount to very much the same thing. You wish to prove, let us say, that the later stages in a development are the true and natural outcome of the earlier. If you decide that they are, you can express your conclusion by saying that the original type has been preserved through all the changes; or that the original principles have remained continuously operative; or that the sequence of stages has followed the natural order, which you would have anticipated had you analysed what was in the germ. I should feel inclined, therefore, to reduce the tests to three in number.

1. *Preservation of type.* 2. *Assimilative power*, involving adaptability of the organism to its environment. 3. *Chronic vigour*, or vitality. The remaining tests appear to have less the nature of tests than the others. "Conservative action upon the past" simply states the fact, that, wherever you have growth, there you have a constant process of taking up from the past whatever it has to yield that is vital,

and of re-absorbing it in a new form in the present. Progress consists in continuous revision of antecedent stages. A living organism is always transcending its earlier states of being. "Anticipation of its future" applies equally to a corruption. The observer, who looked back in the completed process, whether of development or the reverse, would be able to detect in the initial stages the germs of what emerged later in fuller manifestation.

Let us now take these three tests and discuss them, and, so far as we can, try to illustrate them by concrete instances. 1. We will begin with preservation of type, as being, not only the most obvious, but also the surest criterion; though, of course, in applying this test one must first determine, in any case, what one considers the type to be. Let us take, as our concrete examples, the development of the English nation, and the development of the body of Christian doctrine which deals with the Person of Christ.

A nation grows and develops. It may, in a very real sense, be regarded as an organism which maintains its identity through a series of changes. What, then, constitutes the identity of a nation? Is the English nation the same

nation that it was before the Norman conquest? Has it remained true to its national character? Is its type preserved? We have chosen for investigation a comparatively simple case, because the history of England has been largely free from those episodes of catastrophe and revolution which, in other nations, have so often rudely interrupted their orderly development. Though we have expanded overseas yet the central home of the nation remains geographically the same. The evolution of our language has gone on by a process of gradual and natural change. If we adopt Aristotle's criterion in the *Politics*,[1] that a state remains the same if its government remains the same, then we can point, since the days when constitutional government was first established, to an orderly development along the lines of such government. English kings, indeed, there have been, who tried to impose their sole will upon the nation, but, broadly speaking, it remains true, that government of the people by the people has been the mark of English political theory from the very first. There may be signs today that the system of party government is

[1] III., 3, 6, *πολίτευμα δ' ἐστιν ἡ πολιτειά.*

giving place to government by groups, and that the Cabinet is more and more usurping the control which in theory belongs to the representative assembly; but these are not departures from the type sufficient to make us deny that, viewed politically, our development has been true to the original and essential principle. If we turn, lastly, to the region of ideas and sentiments, can we say that England has departed from the ideals and characteristics which were hers originally? Do we still value liberty and justice? Have we the same marked capacity for administration, the same sense of order and control? Are we characterised by that same activity, due, perhaps, to the mixture of blood that flows in our veins, which, while it made our ancestors great discoverers and navigators, has made us great colonists? Any one, I think, who applies to the development of our English nationality the test of fidelity to type would have to admit that the development is a true one, and that there has been a natural continuity of idea, sentiment, and institution, which marks out our growth as healthy and vigorous. We read the beginning of the process in the light of the end, and we see that the two are in natural correlation.

You have, again, a clear example of development in the case of the doctrinal interpretation of the Person of Christ. The Christology becomes more explicitly formulated, and is fixed finally in certain definitè creeds. This interpretation of the Person of the Founder of Christianity claims to be the natural development of the statements about Christ made in the Apostolic epistles, while they, in turn, claim to be the fair and natural outcome of the impression made by Christ upon the minds of the first disciples, as portrayed in the Gospel records. Is this a true development? That is the great question at issue to-day between the upholders of the humanitarian view of Christ's Person and the upholders of the orthodox view, who decline to interpret Him in terms of manhood alone, however ideally conceived. The one school of thought urges, that the apostolic construction, which ultimately issued in the definitions of the creeds, is the natural development of what Christ said about Himself, and of the total impression which He made upon the minds of His contemporaries. The other school contends that Christ was a man, and that subsequent generations idealised His character and attributes, and ultimately deified Him. Which of the two rival

parties is right? To decide the dispute it is necessary to recur to the germinal source of the development, to the original records of the Person, work, and claims of the Founder of the religion. This record has to be analysed. Its authenticity must be established. The previous training and the religious and intellectual outlook of the writers of the record have to be investigated, and then the later developments must be read in the light of the conclusions so reached. Here, of course, we fail to find agreement as to the nature of the original germ. The two sets of disputants differ in their views as to what constitutes the type. But it is the type which is by both parties conceived as the criterion of the later evolution. And where, as in this instance, the germ is a creative Personality (and Christ was that, whatever view you take of Him) the need for recurrence to the germ is all the more apparent. Preservation of type is characteristic of life. The seed of the poppy develops into a poppy, the acorn grows into an oak. Yet type, we must remember, is no narrowly delimited conception, for every organism varies somewhat from every other organism. There is a marked individuality about every living thing. Type can only stand for a mean,

round which variation occurs, and departures from this mean are departures from type. To what extent an organism may depart from the mean, and yet remain true to type, is an interesting problem. In botanical classifications you often find that what one botanist regards as a new variety another will classify under a variety already known and recognised. We cannot, therefore, either in the field of science or history, treat type as anything rigorously fixed, though our task becomes easier when we are dealing with the development of a definite institution, a Church, for example, with defined canons and constitution; or with the evolution of a special system of ideas, which may be treated as forming a whole, as in the case of a religion founded by a single person.

2. Chronic vigour is certainly a characteristic, and, therefore, may be taken as a test of a true development. It is a feature of the life of any organism, which, under normal circumstances, continues vigorous until its appointed cycle is run. Life involves incessant activity, continuous movement, continuous creation of what is new. Chronic vigour includes more than mere duration; it means growth, the putting out of

new powers, and the adoption of new forms, as expressions of the underlying principle. But Newman was undoubtedly right in insisting upon duration as one note of a true development. About a corruption or perversion of type there is often abundant vigour, but it lasts only for a time. The spurious vitality rapidly exhausts itself, and decay sets in. Now the vitality of Christianity is very remarkable. The religion has undergone a fair testing on the field of history. It has been long enough present among other competitors to allow of its claims to be the one true and final religion to be thoroughly weighed and examined; and, after many processes of sifting, it has emerged stronger than ever, and possessed of a vitality which seems to promise for it a future of boundless growth. And, while it has endured, it has continued to express itself in new forms. Its history shows that "increasing series of results" which is characteristic of growth. The principle of nationality, again, with the sentiment which corresponds to it, is proving itself extraordinarily vital. Perhaps someday it may be transcended. The poet's dream of "the parliament of man, the federation of the world," may possibly be realised. But, at present, there is no sign that

the principle of nationality is exhausted. Rather does it seem to grow intenser and more alive, and so becomes a more dominant factor in the development of human history. On the other hand, let us take Judaism as an example. Once vital and progressive, it is this no longer, and we can trace in part the causes of its decay. When, after the exile, the ritual and ceremonial element in the religion was developed at the expense of the moral element, then its progressive powers were arrested. The casing or shell grew so thick that the organism underneath it was crushed. It was starved to death. And we can see how this development of ceremonial was a departure from the true type of the religion whose real strength lay in its ethical monotheism. The ceremonial element in Judaism was not the revealed element but was part of the natural inheritance of all Semite peoples, and, as such, was a mere instrument for giving expression to the essential ideas which formed the kernel of the religion. If Judaism lives on to-day it does so only as a survival, left behind on the strand while the stream flows on in new channels. Its duration is not accompanied by vitality.

3. Lastly, let us consider adaptability or as-

similative power. We treat them together, for the one involves the other. Between organism and environment there is constant interchange. The environment stimulates the organism, which in its turn reacts upon the environment, by adapting itself to its surroundings. Life everywhere shows this perpetual readjustment between the two factors. Every organism grows by assimilating nutriment from its environment which it converts into its own substance. Here the creative power, as we may call it, resides within the organism. It proves itself stronger than the forces which surround it and play upon it, or, if it fails to do this, it dies. But the environment also is active, and exercises a formative influence upon the organism, modifying its development in various directions. The impulse to development, however, lies within the living creature, whose spontaneous activity is the real cause of growth. Can we not find here a test which we may apply to any development; the test of the ability of the organism not only to resist the disintegrating influence of its surroundings but to use these forces of the environment as ministers to its own progressive life? We have been drawing our illustrations from Christianity; let us, once more, take that religion

as our example. Is not one of the striking features about the religion this, that it has proved itself capable of maintaining its own essential life amid the most varied surroundings? It was no empty world, as we have already said, into which it came, but a world full of cultures and creeds and civilisations. The Christian germ could not but take some colour from this complex environment. In some epochs of its history the religion may have shown an over-adaptability; it may have yielded too much to the influences of its surroundings, and so departed from its essential principles. But, on the whole, its development has been marked by the triumph of the essential principles over the environment. It has taken from the surroundings what they had to give that was vital; from Rome its order and organisation; from Greece its free, intellectual inquiry, and such of its culture as was not purely pagan; from the Teuton his sense of individual liberty; but it has digested what it has received and has made these new acquisitions subservient to its own inner and progressive life. In particular, the conception of Christ as the creative fount of life, which is the root conception of the religion, has maintained its supremacy untouched. The

religion has proved its adaptability to the needs of man in all possible conditions of life, under all climates, and amid all social systems; yet its plasticity is no sign of weakness, but rather of inherent strength. It carries still, unimpaired within itself, its principle of life, its sovereign idea, a definite belief about the Person of its Founder.

Such are some of the suggestions conveyed by this conception of development which we have been considering in the last two chapters. We have attempted to indicate in outline what our general attitude should be in interpreting the idea; and we have endeavoured to show the need which exists for arriving at some criteria for testing the worth of any development. Fuller study of the conception is necessary for all of us if we would hope to understand the mind of our own age. The more we study it the richer will the idea be found to be. It is a mine from which we may dig "ore that is not for the mart of commerce," but which is of the utmost value for the nobler purposes of interchange of thought.

CHAPTER XII

THE CONCEPTION OF PURPOSE

THE conception of development is, as we have seen, distinctly teleological in character. The world-process seems to be the expression of a great purpose, which gradually unfolds itself more and more, and of which the complete meaning is not yet plain. About the history of man and the evolution of Nature there is an element of unfulfilled prophecy. The drama of development awaits its crowning act. We have seen, further, that a teleological outlook is natural to man. He is so conscious of purpose in his own activities and aspirations that he cannot but find evidences of purpose in the world outside him. He refuses to believe that his is the only purposive existence in an otherwise purposeless world. He cannot, by the acceptance of such a creed, void his own being of the meaning which it appears to pos-

sess, and so he reads into the outward order of the universe a purpose truly analogous to that which he finds in himself; or, as we may rather maintain, when he begins to inquire into the constitution and meaning of the outward order, he seems to find in it that spiritual affinity with his own being which enables him to treat it as a true, if temporary, home, in which he may grow to maturity, and which he hopes more and more fully to explore. His native and instinctive teleology is sufficiently reinforced by the critical and reflective work of his intelligence to enable him to rise to the rational conviction that the development of the world, in all its parts and stages, is the expression of a divine plan, which is being slowly consummated throughout the centuries.

We have, in this concluding chapter, to seek for further justification for this attitude which man adopts. Let us insist, once more, that it is an attitude rather than an argument. We must admit that the argument from design cannot logically prove the existence of an intelligent God who acts for ends. Our reasoning cannot be thrown into a form which will satisfy the requirements of strict logic. The superstructure is greater than the particular foundation will

bear. But the same criticism is, perhaps, valid of any argument which endeavours to demonstrate the existence and character of God. No finite mind can completely mirror the infinite. All our reasonings about God are attempts to unfold the meaning of a belief or an idea, of which we already find ourselves possessed when thought awakes to consciousness of itself; and the belief or idea is greater than the partial interpretations of it. But our failure does not render our reasonings utterly untrustworthy. They may be sound, so far as they go; and, because they cannot travel the whole distance, they are not therefore to be discredited for that portion of the journey which they can accomplish. Faith, trust, conviction, play no small part in any attempt which we may make to construe to ourselves the meaning of the wonderful universe which surrounds us. This is true, not only of the attempt to interpret the universe religiously, but also of the attempt to interpret it scientifically. Without a trust that Nature is an orderly system, and that the skies will not tumble in upon his head to crush him, the man of science could not proceed one step in his investigation of the mysteries of life and matter. Our ordinary life of the home and the market-place reposes on a

basis of faith. Equally does the life of scientific or philosophic investigation so repose. There is no system of thought devised by man which can completely explain the nature and meaning of reality. Somewhere, sooner or later, we are brought to a standstill and are bound to confess that, for the moment at any rate, reasoning can go no farther. Yet we must live and act, nay, we must try to present to ourselves intellectually the meaning of the world as a system of completely articulated thought. We are convinced that it is such a rational system, and where we cannot know we trust. Unless we are content to be simply sceptical (and an attitude of utter scepticism is self-contradictory, and so impossible for men, either as practical or speculative beings), we must, and habitually do, adopt, in the last resort, beliefs which reason can never completely justify. They do not contradict reason, but reason cannot explicate in its own terms all their content. Such is our attitude in the case of the argument from design, an argument which carries with it great weight, and which is strengthened when taken in connection with other arguments for God's existence. Behind the terms of logical inference, in which the argument is cast, lies the larger conviction, and

this will always remain operative despite any explanations which science may give of adaptations in Nature. For we cannot observe adaptations without wondering at them, without seeing in them a significance, without regarding them as expressive of a purpose.

But our conviction that the world-process is purposive, and therefore ultimately the expression of mind, rests upon a deeper foundation, which is discovered when we analyse what we mean by causality. That nothing can happen, that is, that no event or change can come into being without an appropriate and adequate cause for the same, is, of all truths, the one perhaps most firmly held by man. Our progressive interpretation of the changing universe around us is just an attempt to discover causes. The whole work of science is to investigate causes, and so to reduce to order the sequences of phenomena in the world outside us.[1] The orderly sequences which science discovers she calls "laws of Nature," meaning by "law" an observed uniformity of behaviour. A law of

[1] See, however, for a theory of science as "descriptive," Ward's *Naturalism and Agnosticism;* also Taylor's *Elements of Metaphysics*, p. 174.

Nature is nothing more than a statement of the way in which certain happenings or events occur, have occurred in the past, and will, under similar conditions, occur in the future. Sequence, therefore, seems so far to be the key-note of physical causation. Yet, clearly, sequence is not enough. There is more in cause than the idea of sequence; indeed, analysis reveals that sequence is the least important element in our conception of causality, and one which, in our final interpretation, we may have to discard altogether. We need, in addition, the idea of productive power. A cause, as we say, *does* something. In the language of science, a causal action involves an expenditure of force or energy. Power is a more important element than sequence in our conception of cause. We must note, in passing, that the idea of law contains no conception of efficiency. It is sometimes thought that the discovery of a law of Nature provides us with a complete explanation of the series of phenomena grouped under the law. But a moment's reflection shows us that the discovery of a law tells us nothing at all in way of explanation of any series of changes. What has been made plain to us is merely the order in which the changes in question happen.

Why they so happen still remains to be discovered. The source of power is still concealed. That there is power is something which we cannot doubt. Force or energy is a conception underlying all the investigations of physical science, which has gone far in the direction of treating all energy in terms of quantitative measurement. We know (unless, indeed, recent discoveries about the nature of matter may compel us to modify our views) that the amount of energy in the world is a fixed and constant quantity, and that, though the forms of energy may change, the total amount remains the same, loss of energy under one form being compensated for by the appearance of precisely the same amount of energy under another form.[1] Redistribution of energy, therefore, is the formula which expresses the nature of the changes occurring in the physical universe. But it is not a formula which in any way satisfies our demand for a

[1] Since the whole range of the universe is not open to our investigation, we cannot assert positively that the doctrine of the conservation of energy is true of all physical reality. At the same time, the truth of the doctrine has been so widely established by physical science, that it may be accepted as a truth, which obtains for any closed material system.

causal explanation. All that science succeeds in doing is to trace back any event to the antecedent conditions from which it has arisen. But these antecedent conditions have themselves to be referred to other antecedent conditions, and those again to others, and thus we find ourselves confronted with an infinite or endless regress, and with the task of tracing out the course of a stream which has no determinate source. Now such a conception as this of an infinite regress cannot satisfy the demand of my intelligence for an explanation of events. An infinite regress interpreted solely in physical terms is ultimately unthinkable, and endless redistributions of energy throw no light upon the great problem of the source of energy. Our minds persist in asking of what nature is the productive power which is at work in the universe.

Let us observe that we could not ask such a question at all unless we had already had experience of power. If you could imagine a being endowed solely with the sense of sight and without any capacity for initiating action, for such a being the word power would, I suppose, have no meaning. All that such a being would be aware of would be a sequence of changes, and causation would be for it, what

some sensationalist thinkers have unsuccessfully tried to make it, a mere matter of phenomenal succession. From whence, then, do we derive our conception of power? In the first place, from the sensations of pressure and resistance which we experience as our bodies come into contact with the material world. We become aware, in this way, of the existence of objects outside us which can act upon our own bodies and with which we are brought into physical contact. But, secondly, a far more important and deeper source of the conception of power is to be found in our own volition. The root element in the whole causal idea is to be sought in our knowledge of ourselves as willing, or volitional, agents. We do things; we exert effort; we attend to certain incidents in the changing scene around us, and can compel a flagging consciousness to arouse itself and observe what is happening. We act for ends, and deliberately seek out the means to reach them. Our causal activity is purposive. And we possess the consciousness that we are doing these things freely, that we are, in a word, creative, or self-determining, centres of power. We are not mere channels through which flow tides of energy which we cannot control, but we possess

a real initiative, a true causal agency. If we are told that we are deceived, and that what we seem ourselves to do is being done in us, and through us, by another agency, we decline to believe it. Our awareness of ourselves as free causal agents is an ultimate fact of spiritual experience, and we refuse to hold ourselves the victims of an illusion which affects all that gives most meaning to our own personality. Further, we are moral beings for whom the word "ought" has a vital significance, and we know that "ought" involves "can," that freedom is the correlative of duty, and that we praise and blame ourselves and others for actions for which we hold the agents responsible. To take away freedom is to take away morality, or, at least, to rob it of more than half its glory. It is as a moral being who accounts himself responsible for his actions that man becomes most deeply aware of the meaning of power and causality. The innermost significance of the conception of cause is derived from the central shrine of human personality. From that centre we investigate outwards, and, when we find in the world around us all the signs of change and productive power, even though the actual power be hidden from us, we can do

nothing else to satisfy our craving for an explanation of such change than interpret it in terms of a causality like our own, in terms, that is, of a Divine Will. Our primitive ancestors, in that phase of religion known as animism, referred the changes which they saw around them, the movement of the leaf, the dancing of the stream, the upspringing of the herb, to the activity of spirits of woodland and water and meadow. For them (so natural was this mode of interpretation) the whole world was peopled with spiritual powers, with beings who, by their creative activity, caused all the changing phenomena of Nature, and man saw everywhere his own image reflected back from the world around him. Our advance in knowledge has been in the direction of referring natural changes to will, conceived as one, rather than as many; but it is still a will, interpreted in terms of our own will, which thought posits as the ultimate cause of the changes in the material world. We have not, that is, left the path trodden by those early feet, only the path has carried us into sight of a new prospect. And, however far the path may still go, however long may be the story of human thought, it is impossible that man can ever interpret God except in

terms of free, creative will. Will, equally with intelligence, is the element upon which we must insist as being part of the essential nature of God. There is a danger that philosophical speculation may construe God's being in terms of thought alone and may forget to emphasise the quality of will. But a God, so conceived, is not a God whom man can either love or worship. Indeed, can we, we may ask, form any intelligible conception of an existence which consists of pure thought alone? Of pure thought we have no experience whatever. Our own thought is always combined with will, and, we may add, with feeling also. If there is anywhere a purely thinking being we can form no idea of his mode of existence. Intelligence and will, however, whether in ourselves or God, are not to be treated as two distinct faculties. The days of a facultative or departmental psychology are numbered. Personality is an indivisible unity, in which you can indeed distinguish elements, as opposed to faculties, but whose activity involves, at each moment, the whole richness of the nature.

Here, then, in the thought of creative will, our minds find that final interpretation for which they are looking. Here lies the only possible

solution of the great causal problem. For what we wish to discover is a true cause, a cause, that is, which cannot be treated as a mere effect of anything antecedent to it, but which contains within itself the spontaneity and productive energy from which flows freely the river of universal change. We ourselves, if the verdict of our self-knowledge and experience can be trusted, are, in our limited degree, such creative causes. Physically regarded we are effects of antecedent conditions; regarded spiritually we may in part be so, but there does come a point in our analysis of moral personality where we are obliged to stop in our regress and to confess that we cannot be entirely interpreted in terms of antecedent conditions, but have the power of true self-determination and can originate change. Such freedom, of course, we owe to God, but, in creating us, He made us free. He caused us to be causes of our own activities, limiting His own power thereby (for no less a consequence follows from our admission of human freedom), but thereby also rendering possible the existence of a kingdom of moral personalities, whose wills were their own, in order that they might make them His.

Two points, in conclusion, invite our further consideration.

(*a*) The first is, that, in our own experience, the deepest significance of will is to be found in connection with moral action. The stupendous importance of will and free causality is best revealed by the peculiarly ethical factors of remorse, responsibility, the emotions of shame and reverence, the consciousness that we might have done otherwise than we have done. And, when we regard man as a moral being, we at once think of his life as purposive. The conception of purpose, which is dominant when you consider man as an intelligent agent acting for ends, is even more prominent when you think of him as a moral being acting for moral ends and striving to realise moral ideals. This, I suppose, would be admitted by any one. But if we admit it, then, it appears to me, when we transfer the conception of will to God's causal activity, it is difficult not to interpret that activity in terms of moral purpose. The inference, I admit, is not logically valid; but it is important to remember that it is not bare will devoid of all richer significance which we carry over naturally and attribute to God. Bare will has no meaning. A will must will something, must

seek some end, must invest itself with other attributes besides that of mere efficiency. And, as we cannot think of our own volitional activity except in terms of ends which ultimately [1] take a moral colouring, so we cannot think of God except as purposing moral ends. It might be retorted that God may will an immoral end, just as a man, in virtue of his freedom, can, and does, will to do evil. From the point of view of our present argument that is a fair retort; but, even so, the objector has granted what we are primarily contending for, namely, the existence of a will with a content and characteristics, seeking positive ends which it conceives as worth pursuing. What we must banish from our minds is the thought of bare, indeterminate will. Whether the Divine will is more appropriately to be thought of as seeking evil ends rather than good ones is another question, to which, I imagine, there is not likely to be given any

[1] Man's ends take a moral colouring "ultimately," that is, if life is viewed as a whole. It is possible, of course, to take a single activity of man, a single act, and say that it has no moral colour, *e.g.*, if I knock the head off a poppy when on a walk, you could hardly read a moral purpose into the act, but if I spent the whole afternoon in so doing you would rightly charge me with waste of time.

other answer than that the Divine purpose must include what we mean by morality. For, if God is thought of as seeking evil, as saying deliberately, like Milton's Satan, "evil be thou my good," then we are confronted by the fact of morality, and man's recognition that his highest good consists in the pursuit of moral ends. How can man condemn himself, as he does, for pursuing evil ends if God pursues them? On such a theory man's moral life becomes meaningless. Whatever our characterisation of ultimate reality may be, it must be consonant with our appreciation of moral goodness and our pursuit of ethical ideas. Because, then, moral purpose is ultimately connected with human free causality, and because such free causality finds its chief significance in the moral sphere, it becomes natural for man to think of the Divine causality as moral. And, the greater the importance which man attaches to the moral aspect of life, the more readily will he see in God's causal activity the expression of a moral purpose. His conviction that the universe is a home of order, and that he can trust it, will ripen into a conviction that it is a home of moral order. The basis of his trust will be moral. He will feel that it is a moral will which is

guiding its destinies; in other words, that in and behind its changing processes lives a personal and moral being.

(*b*) The second point to consider is this. Is there any necessary contradiction between the scientific account of causation in the physical universe, and the religious account of it which refers all natural changes to the creative activity of a personal will? Are the laws of Nature to be regarded as modes of a Divine volition?[1] Is there anything foolish or contradictory in so construing them? That any difficulty at all should be felt upon this point is due, I believe, to the prevalence of an imperfect conception of what will is. Just as we are often taught that creation must mean creation out of nothing, and forget that any change whatever is really created change and involves the emergence of something which was not there before, so we have come to think of will as capricious, arbitrary, indeterminate activity. Will is regarded as consisting of what Martineau describes as "detached spurts of power," not a steady, continuous, activity, but

[1] For a full discussion of this problem see Fraser's *Philosophy of Theism*, second series of lectures, lecture ii., "Causation Theistically Interpreted".

an intermittent one, fitful in its operation, and owning many intervals of quiescence. Of this nature, certainly, is much of our own volitional activity. We pursue ends for a while and then weary of the pursuit. Intervals of sleep interrupt our conscious activity. We find it difficult to concentrate our attention for any length of time on a given point. We do not succeed in rounding off all our energies in the prosecution of some few, great dominant purposes which shall give unity and connection to our life. We will, but we have to will to will. Our freedom is a possession of which we only become aware if we try to enjoy it, and we do not make the continuous attempt. And so we come to think of will as necessarily connected with intermittent and somewhat capricious activity. Then, when science shows us a world in which activities are always uniform, where strict order reigns, and where "nothing is that errs from law," we begin to wonder if, after all, the conception of will can be applied to such activities, whether will is not something too volatile and wayward to be a satisfactory explanation of movements so orderly in their procession and so strictly determined in their relation to the past. But, surely, if there existed a perfect will, a will "without

variation or shadow that is cast by turning," the activities of that will would be continuous and orderly. Unvarying law, that is, unvarying sequence among phenomena, would be the consistent and natural expression of such a perfect will, and the iron necessities of Nature, which now seem to be at the opposite pole from all that we mean by freedom, would be the complete expression of the highest freedom. In this way the laws of the material universe may be construed as the expression of the unchanging purposes of God. Where is the contradiction between this theistic view and the view of physical science? There is none. Science gives you her view of natural causation without regard to the spiritual significance of the same. The theist adds on to the scientific view other elements, which he derives from a consideration of man's place in the universe as a moral personality. He admits all the facts which science adduces, only he looks at them in a new light. He admits the explanation which science has to offer as to the mechanism by which physical changes come to be, but he urges that these explanations are not self-explanatory, and need, in their turn, another explanation, which he finds in the postulate of a Divine will which works

through the mechanism of Nature to reach moral ends. The only quarrel which the theist has with the man of science arises, if the latter offers his partial and abstract explanations as complete explanations. He, speaking in the name both of philosophy and religion, reminds the physicist that a higher synthesis is possible, and one which shall do justice to those spiritual factors of experience, which the man of science is bound to leave on one side if he would carry his investigations to a successful issue. Science, then, shows us the orderly sequences of phenomena, and construes all physical changes in terms of the redistribution of energy. It remains for a deeper inquiry to interpret the facts in another manner, and, by an act of faith, if you will, only not a faith divorced from reason, to rise to the conviction that

> The whole round earth is every way
> Bound by gold chains about the feet of God.

The lower causality of Nature is interpreted by the higher causality of man. The beginning is once more explained in the light of the end.

If, now, we can climb to the height of a true theistic faith, we then turn back and retraverse our road; but we carry with us the illumination

which shone for us on the supreme summit of vision; and we see, in all the successive stages of Nature's evolution, the self-revelation (I see no reason why we should be ashamed of the word) of a Personal God and the gradual unfolding of the spiritual meaning of the universe. From matter to life, from life to consciousness, from consciousness to self-consciousness and morality, and the emergence of beings who know themselves as persons and call God a Father—these are the stages through which God has been gradually revealing to men His own nature and His eternal purposes. And we wait for the completion of the revelation. For man is only in the making. His powers of thought and action are not yet fully ripe. He has much more yet of God to know. Each generation of men, as it arrives upon the scene, looks through the archway of its experience and sees beyond it, gleaming,

> That untravelled world, whose margin fades
> For ever and for ever, as we move.

The vision would be intolerable, and would mock us, if it were not that we are so constituted that, where knowledge fails, there conviction steps in to steady and inspire us. Thus we go

through life, assured that the power behind phenomena, whose ceaseless activity has produced our own moral being, cannot be less than moral, and so can be eternally trusted. "In Him"—it is the theist's reasoned conviction—"we live, and move, and have our being."

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